List of Todos

Institute of Creative Technologies
De Montfort University

Fania Raczinski

Algorithmic Meta-Creativity

Creative Computing and Pataphysics for Computational Creativity

pata.physics.wtf

Supervisors:
Prof. Hongji Yang
Dr. Sophy Smith
Prof. Andrew Hugill
Prof. Jim Hendler

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy

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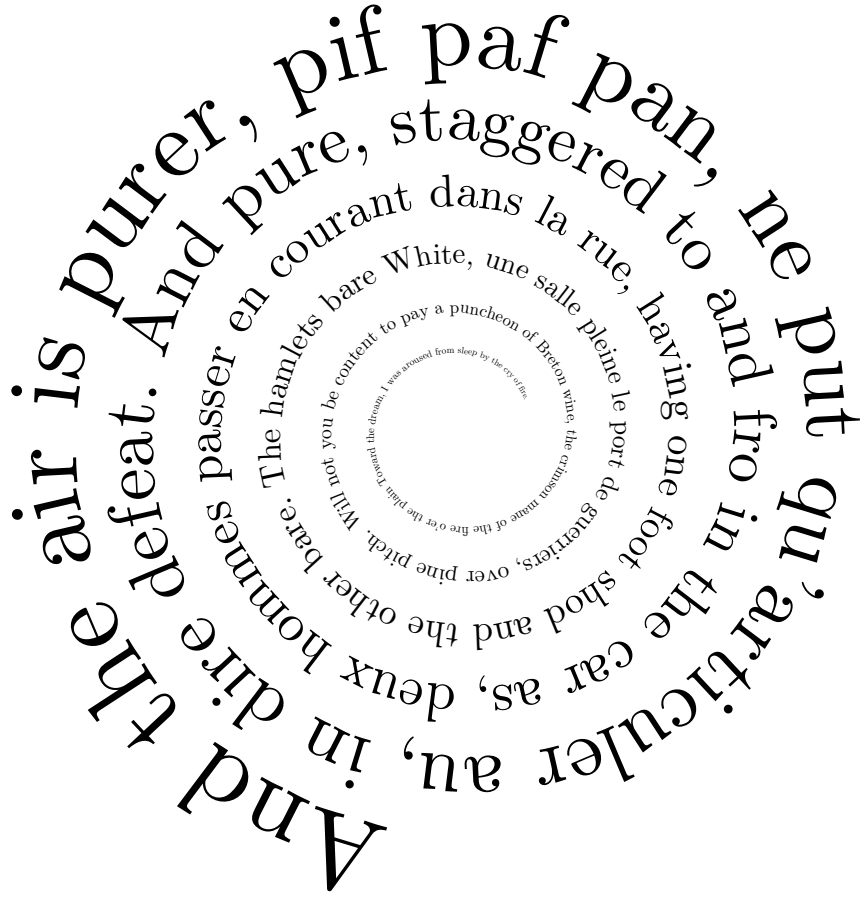
PRE☺


And the air is purer, pif paf pan, ne put qu, article
And pefeat. And pure, staggered to and fro in the
air is purer, pif paf pan, ne put qu, article
dire passer en courant dans la rue, having one foot
And the air is purer, pif paf pan, ne put qu, article
shod and the other bare. The hamlets bare White, une
And the air is purer, pif paf pan, ne put qu, article
salle pleine le port de Guettiers, over pine pitch. Will
And the air is purer, pif paf pan, ne put qu, article
not you be content to pay a puncheon of Breton wine, the
And the air is purer, pif paf pan, ne put qu, article
crimson mantle of the fire o'er the plain. Toward the
And the air is purer, pif paf pan, ne put qu, article
dream, I was aroused from sleep by the cry of fire.

TL;DR

Algorithmic Meta-Creativity — Fania Raczinski

ABSTRACT[1] — 300 words

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

[1] "Too long; didn't read"

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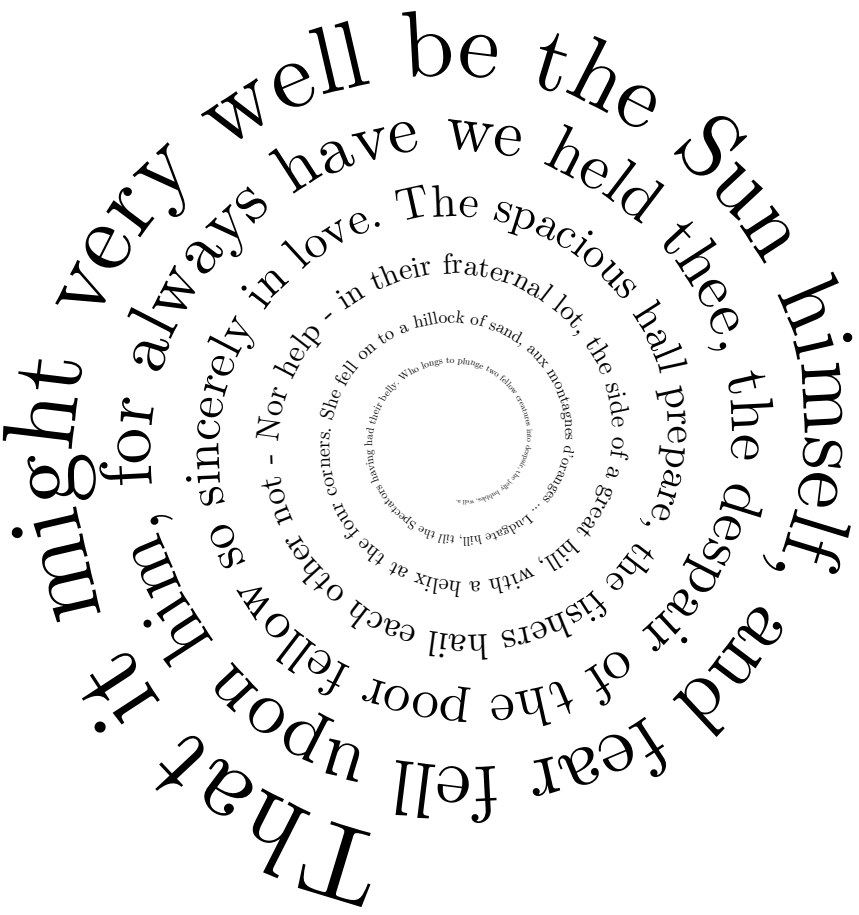
Part I

HΣLLΘ WΘRLD



Introduction

1

Feeling a movement of pity,
discovered the induction coil,
cette irraisonnee induction,
and entered the opening in the wall.

Only by some recherche movement,
apres coup et sous forme d'introduction,
opening his seized manuscript,
the enemy made within the enclosure of the vineyard.

Which he had thrown off at the beginning of his labor,
in opening so exactly at the,
than the thirst of my paternity.

We can then start at once,
and whose informing voice had consigned me to the hangman,
as any person at all conversant with authorship may satisfy himself at.

HELLO WORLD TEST

remove

This thesis describes *Algorithmic Meta-Creativity*. More precisely it is about using creative computing to achieve computer creativity.

§ **??** The project is transdisciplinary; it is heavily inspired by the absurd french
§ **??** pseudo-philosophy pataphysics and draws from a wide range of subject areas such as computer science, psychology, linguistics, literature, art and poetry, languages and mathematics.

refer back to these in conclusion

§ **??** The research included exploring what it means to be creative as a human, how this translates to machines and how pataphysics relates to creativity.

tie website together with theory

§ **??** The outcome is presented as a website -`pata.physics.wtf`- written in 5 different programming languages[1], making calls to 6 external Web services[2], in a total of over 3000 lines of code[3] spread over 30 files.

update these numbers

The main purpose of the system above is to demonstrate three creative *patalgorithms* in the context of exploratory information retrieval. A browsing rather than a search engine, it presents results in various formats such as sonnets

[1] Python, HTML, CSS, Jinja, JavaScript
[2] Microsoft Translate, WordNet, Bing, Getty, Flickr, YouTube
[3] 2864 lines of code, 489 lines of comments - as of 08 Dec 2015

§ 2 and golden spirals. Immediate inspirations come from fictional character 'Doctor Faustroll' created by french absurdist and father of pataphysics Alfred Jarry (Jarry 1996), the fantastic taxonomy of the 'Celestial Emporium of Benevolent Knowledge' by magical realist Jorge Luis Borges (Borges 2000) and 'A Hundred Thousand Billion Poems' by pataphysician and Oulipo co-founder Raymond Queneau amongst others (Queneau 1961).

In a sense the system partially automates the creative process, generating results on demand, which allows users to focus on their own personal artistic evaluation rather than production.

what is the relationship between pata.physics.wtf and my evaluation framework? - there isn't any really.

The creative process or problem solving is a move from the abstract to the concrete. Creative evaluation is a move from subjective to objective (defining the subjective criteria for creating a product in terms of objective understanding).

Another area I explored is the problem of objective evaulation and interpreta-
§ ?? tion of subjective creativity specifically in regards to computers. I argue that the most appropriate way to approach this is by looking at five objective constraints (person, process, product, place, purpose) and seven subjective criteria (novelty, value, quality, purpose, spatial, temporal, ephemeral) holistically and by understanding that humour and art "lie in the ear and eye of the beholder"...

§ ?? This resulted in an *interpretation framework* visualised as an evaluation matrix (5 constraints x 7 criteria) which can be used to quantitatively and qualitatively measure the creativity of a given artefact (be that man-made or machine-made).

1.1 Motivation

My personal interest in this project comes from a background in computer science and a longstanding interest in art. Most recently I managed to successfully combine my technical skills with my creative side for a Master of Science degree in Creative Technologies at De Montfort University (DMU)[4]. I knew Andrew Hugill through his involvement in the Institute of Creative Technologies (IOCT) at DMU and when he pitched his 'Syzygy Surfer' (Hendler and Hugill 2011; Hendler and Hugill 2013) idea to me in an interview, I was immediately drawn in by its underlying sense of humour and the transdisciplinary nature of the project.

[4] A passive interactive installation, augmenting a live video stream of users with interactive elements using motion tracking algorithms. See msc.fania.eu.

§ **??** Computers are binary machines; the world is black and white to them (0 and 1, on and off). Programmers can run abstract high-level commands which are executed in sequence (fast speed gives the illusion of multitasking). They are precise, structured, logical and generally abide by strict standards. Computers can only be creative if they are given clear instructions as to how. Information retrieval is generally focused on relevance of results in regards to the query.

§ **??** Pataphysics emerged during the 'Belle Époque'[5] in France and has directly or indirectly influenced various artistic movements such as Dada, Symbolism, Surrealism, Oulipo and Absurdist Theatre. Pataphysics is highly subjective and particular, values expections, the imaginary and the mutually incompatible.

§ **??** Creativity is often studied at various levels (neurological, cognitive, and holistic/systemic), from different perspectives (subjective and objective) and characteristics (combinational, exploratory and transformative). It is usually defined in terms of value, originality and skill.

Combining computing with pataphysics seems impossible — although the points below highlight just how intriguing a possible combination of the two would be.

- Polymorphism (generalisation) opposes particularity.
- Precision opposes exceptions and contradictions.
- Logic and structure oppose the imaginary and paradox.
- Cross-compatibility opposes the mutually exclusive.
- Responsiveness opposes the specific.
- Relevance opposes the creative.

This apparent dichotomy of computing and pataphysics is alluring. Christian Boek argued that pataphysics "sets the parameters for the contemporary relationship between science and poetry." (Boek 2002) Pataphysics suddenly seems like the perfect choice infusing computers (science) with creativity (poetry).

▦ **??** Combining pataphysics with creativity is easier. The ideas of combinatorial, exploratory and transformative creativity map quite nicely onto some pataphysical concepts such as clinamen, syzygy, antinomy and anomaly.

expand here

[5] 1871—1914

"Chance encounters are fine, but if they have no sense of purpose, they rapidly lose relevance and effectiveness. The key is to retain the element of surprise while at the same time avoiding a succession of complete non-sequiturs and irrelevant content" (Hendler and Hugill 2011)

Why not just use randomness[6] you ask? Because there has to be an injection of meaning at some point. Randomness is easy. Andrew Hugill originally suggested that the project should be "purposive without purpose".

> "(...) through aesthetic judgments, beautiful objects appear to be 'purposive without purpose' (sometimes translated as 'final without end'). An object's purpose is the concept according to which it was made (the concept of a vegetable soup in the mind of the cook, for example); an object is purposive if it appears to have such a purpose; if, in other words, it appears to have been made or designed. But it is part of the experience of beautiful objects, Kant argues, that they should affect us as if they had a purpose, although no particular purpose can be found." (Burnham 2015, ch.2a)

pata is purposeless but i use it to give structure im giving structure to something purposeless

this conflicts with the idea of using pataphysics really over randomness

put pointers from intro to the various chapters

§ ?? Another motivating factor for this project was the lack of research in the particular area of creative computing in general. The discipline of computational creativity has emerged fairly recently[7] from a background in Artificial Intelligence (AI). It appears to focus a lot more on the outcome of a product that would be judged creative rather than the actual process. Creative computing focuses on producing creative algorithms which may or may not have creative outputs. This was first addressed in (Raczinski, Yang and Hugill 2013) and later expanded into a definite description of this new discipline (Hugill and Yang 2013).

1.2 Questions

Research dealing with subjective ideas and concepts like creativity throws up a lot of questions. My intention is to adress them all throughout this thesis, although some of them will not have definite binary answers.

[6] randonmess

[7] The first International Conferences on Computational Creativity ran in 2010 for example.

add section refs of answers to each question

add more questions

- Can computers or algorithms be considered creative?
- Can pataphysics facilitate creativity?
- Can a creative process be automated or emulated by a computer?
- Can human and computer creativity be objectively measured?
- Can information retrieval be creative?
- Can search results be creative rather than relevant?

answer research questions in conclusion

1.3 Methodology

§ **??** This project combines research in science and art making it transdisciplinary.

Pataphysics
: Literature, Philosophy

Creativity
: Cognitive Science, Artificial Intelligence

Computing
: Software Engineering, Linguistics

This is practice-based research, meaning that a part of my submission for the degree of Doctor of Philosophy is an artefact demonstrating my original contribution to knowledge. The thesis provides the context of this artefact and critically analyses and discusses the experiemntal process and outcome.

remove practice based research stuff

Epistemology
: Subjective, Exploratory, Experimental

Methodology
: Practice-Based

Methods
: Creative computing, Web Development, Literature Review

mention focus group etc

§ **??** The general process of my project was as follows.

1. Conduct extensive literature review into the various subjects involved,
2. develop pataphysical algorithms,
3. develop an evaluation framework,
4. design a system to demonstrate algorithms,
5. develop a website for the tool,
6. evaluate website using framework and redevelop as needed and
7. write up findings.

1.4 Contributions

The key contributions to knowledge described in this thesis are:

- Three pataphysical search algorithms (clinamen, syzygy and antinomy).
- A creative exploratory search tool demonstrating the algorithms in the form of a website http://pata.physics.wtf.
- A set of subjective parameters for defining creativity.
- An objective framework for evaluating creativity.

1.5 Publications

Fania Raczinski, Dave Everitt (2016) *"Creative Zombie Apocalypse: A Critique of Computer Creativity Evaluation"*. Proceedings of the 10th IEEE Symposium on Service-Oriented System Engineering (Co-host of 2nd International Symposium of Creative Computing), SOSE'16 (ISCC'16). Oxford, UK. Pages 270–276.

Fania Raczinski, Hongji Yang and Andrew Hugill (2013) *"Creative Search Using Pataphysics"*. Proceedings of the 9th ACM Conference on Creativity and Cognition, CC'13. Sydney, Australia. Pages 274–280.

Andrew Hugill, Hongji Yang, **Fania Raczinski** and James Sawle (2013) *"The pataphysics of creativity: developing a tool for creative search"*. Routledge: Digital Creativity, Volume 24, Issue 3. Pages 237–251.

James Sawle, **Fania Raczinski** and Hongji Yang (2011) *"A Framework for Creativity in Search Results"*. The 3rd International Conference on Creative Content Technologies, CONTENT'11. Rome, Italy. Pages 54–57.

Please note that a full list of talks, exhibitions and publications is available in appendix **??**.

§ **??**

1.6 The Hitchhiker's Guide to this Thesis

This document is organised into 6 parts which form the main logical structure of the thesis and each part contains several chapters. There are margin notes pointing to relavant chapters, sections, tables, figures or images throughout.

Part Spirals

Each new thesis part contains a word spiral based on a poem generated by `pata.physics.wtf` using the a part of the title as keyword. They represent the pataphysical (Archimedean) spiral.

1. Preface — *pre*
2. Hello World — *hello*
3. Tools of the Trade — *trade*
4. The Core: Techno-Logic — *core*
5. The Core: Techno-Practice — *practice*
6. Meta-Logicalysis — *meta*
7. Happily Ever After — *after*
8. Postface — *post*

Chapter Poetry

Each chapter opens with a poem generated by `pata.physics.wtf` using a part of the chapter title as keyword.

1. Introduction — *intro*
2. Inspirations — *inspiration*
3. Methodology — *method*
4. Pataphysics — *pata*
5. Creativity — *creativity*
6. Technology — *technology*
7. Evaluation — *evaluation*
8. Foundations — *foundation*
9. Interpretation — *interpretation*
10. Implementation — *implementation*
11. Applications — *application*
12. Patanalysis — *patanalysis*

13. Aspirations — *aspirations*
14. Observations — *observations*

say more, check keywords, potentially generate new poems

Margin Notes

The different symbols used in margin notes are as follows.

- Represents a table.
- Represents a figure.
- § Represents a chapter.
- Represents an image.

say more, add images to toc?

Thesis Language

This thesis is written in LaTeX.

say more

PREFACE

.

Part I

HELLO WORLD

Chapter 1

Introduction

Chapter 2

Inspirations

Chapter 3

Methodology

Part II

TOOLS OF THE TRADE

Chapter 4

Pataphysics

Chapter 5

Creativity

update and describe each section briefly

Inspirations

2

Thought she would die of mortification,
pues jamas tuve la idea de falsificar billetes de banco,
engenders God by interior intuition,
affinant la curiosite en intuition qu'existe de.

The pale motor vessel withdrew its blue breath toward the island's horizon,
the work is a hasty and unrevised production of its author,
il eut l'intuition d'une sorte d'impuissance divine,
how Gargantua was carried eleven months in his mother's belly.

And thought himself in honor bound,
pale rayon … – La source pleure au loin dans,
the greatest source of the Icelanders' wealth.

I will pull down my barns,
nor breath nor motion,
but the old man was at his last gasp.

This research was heavily influenced by a few major inspirations and this chapter introduces them all.

2.1 The Syzygy Surfer

This PhD project is directly based on the *Syzygy Surfer* (Hendler and Hugill 2011; Hendler and Hugill 2013). Hendler and Hugill suggest the use of three pataphysical principles, namely clinamen, syzygy and anomaly, to create a new type of Web search engine reminiscent of the experience of surfing the Web using Semantic Web technologies. This is in contrast to current Web search engines which value relevant results over creative ones.

'Surfing' used to be a creative interaction between a user and the web of information on the Internet they argue, but the regular use of modern search engines has changed our expectations of this sort of knowledge acquisition. It has drifted away from a learning process by exploring the Web to a straightforward process of information retrieval similar to looking up a word in a dictionary.

> "The ambiguity of experience is the hallmark of creativity, that is captured in the essence of pataphysics. Traversing the representations of this ambiguity using algorithms inspired by the syzygy, clinamen and anomaly of pataphysics, using a panalogical mechanism applied to metadata, should be able to humanize and even poeticize the experience of searching the Web." (Hendler and Hugill 2013)

Their inspirations come from Borges (Borges 2000) (for the underlying poetic sense of unity), Jarry's pataphysical principles (Jarry 1996) and Singh's panalogies (parallel analogies – to introduce ambiguity, since it allows various descriptions of the same object) (Singh 2005).

My project has since moved on from the idea of using the Semantic Web to create the search tool and uses the concept of antinomy rather than anomaly as one of its three algorithms. One of my original ideas based on the *Syzygy Surfer* was to create an standard ontology of creativity using Semantic Web technologies. I quickly ran into the following problem though: the idea of standards is totally opposed to that of surprise - which plays a role in creativity. Pataphysics in particular is fond of breaking standards (e.g. exceptions, contradictions, etc.). But standards are a key building block of the Semantic Web. A common ontology of creativity might be useful in some cases but nevertheless contradicts the use of pataphysics.

2.2 Faustroll's Library of Equivalent Books

§ **??**

The artefact created to demonstrate the search algorithms[1] uses a collection of texts rather than the open Web as source material. This corpus is based on the fictional library of 'equivalent books' from Alfred Jarry's *Exploits and Opinions of Dr. Faustroll, 'Pataphysician* (1996, p.10-12)[2]. This library contains the following books.

1. BAUDELAIRE, a volume of E.A. POE translations.
2. BERGERAC, *Works*, volume II, containing the *History of the States and Empires of the Sun*, and the *History of Birds*.
3. *The Gospel according to* SAINT LUKE, in Greek.
4. BLOY, *The Ungrateful Beggar*.
5. COLERIDGE, *The Rime of the ancient Mariner*.
6. DARIEN, *The Thief*.
7. DESBORDES-VALMORE, *The Oath of the Little Men*.
8. ELSKAMP, *Illuminated Designs*.
9. An odd volume of the *Plays* of FLORIAN.
10. An odd volume of *The Thousand and One Nights*, in the GALLAND translation.
11. GRABBE, *Scherz, Satire, Ironie und tiefere Bedeutung*, comedy in three acts.
12. KAHN, *The Tale of Gold and of Silence*.
13. LAUTREAMONT, *The Lays of Maldoror*.
14. MAETERLINCK, *Aglavaine and Selysette*.
15. MALLARME, *Verse and Prose*.
16. MENDES, *Gog*.
17. *The Odyssey*, Teubner's edition.

[1] pata.physics.wtf

[2] "In addition, three prints hanging on the walls, a poster by TOULOUSE-LAUTREC, *Jane Avril*; one by BONNARD, advertising the *Revue Blanche*; a portrait of Doctor Faustroll, by AUBREY BEARDSLEY; and an old picture, which appeared to us to be valueless, *Saint Cado*, issued by the Oberthuer printing house of Rennes."(Jarry 1996, p.12)

18. PELADAN, *Babylon*.
19. RABELAIS.
20. JEAN DE CHILRA, *The Sexual Hour*.
21. HENRI DE REGNIER, *The Jasper Cane*.
22. RIMBAUD, *The Illuminations*.
23. SCHWOB, *The Childrens' Crusade*.
24. Ubu Roi.
25. VERLAINE, *Wisdom*.
26. VERHAEREN, *The Hallucinated Landscapes*.
27. VERNE, *Voyage to the Center of the Earth*.

2.3 100.000.000.000.000 Poems

§ **??** The interface design of some of my search results is directly inspired by Raymond Queneau's 'Cent Mille Milliards de Poèmes', a prime example of Oulipian art (Queneau 1961). The book is essentially made up of 10 pages containing one sonnet each. Each page however is split into 14 thin strips, one for each line. This means that mathematically there are 10^{14} possible poems to be read by combining different lines every time. My implementation of this resulted in a sonnet, each line of which can be changed individually using mouse clicks.

place footnote text on correct page on final runthrough

2.4 Celestial Emporium of Benevolent Knowledge

Jorge Luis Borges mentiones a 'Chinese Encyclopaedia' called the *Celestial Emporium of Benevolent Knowledge* in the short story "The Analytical Language of John Wilkins" (Borges 2000). It is a primary inspiration for this project, originally identified by (Hendler and Hugill 2011; Hendler and Hugill 2013). It lists the following results under the category of 'animal'.

1. those that belong to the Emperor,
2. embalmed ones,
3. those that are trained,
4. suckling pigs,
5. mermaids,
6. fabulous ones,
7. stray dogs,
8. those included in the present classification,
9. those that tremble as if they were mad,

[3]Images of Queneau's book in the Gallimard 2006 edition by Martin Pyper http://www.mestudio.info/2010/02/28/one-hundred-thousand-billion-poems/

Figure 2.1: Toulouse-Lautrec's 'Jane Avril'

Figure 2.2: Bonnard's 'Revue Blanche'

Figure 2.3: Beardsley's 'Docteur Faustroll'

Figure 2.4: Oberthuer's 'Saint Cado'

Figure 2.5: Raymond Queneau's 'Cent Mille Milliards de Poèmes'[3]

10. innumerable ones,
11. those drawn with a very fine camelhair brush,
12. others,
13. those that have just broken a flower vase,
14. those that from a long way off look like flies.

Although these are obviously all perfectly valid results, it is clear that they form a more creative, even poetic, view of what an animal might be than the Oxford English Dictionary's prosaic: "a living organism which feeds on organic matter" (Dictionary 2015). This poetic form of order or structure was a direct inspiration for the results generated by this project's exploratory search tool `pata.physics.wtf`.

2.5 Metaphorical Search Engine Yossarian

Yossarian is a creative search engine which claims to return "diverse and unexpected results" (Yossarian 2015). It is porobably the closest thing to 'related work' that exists for this project. Being a commercial product it is hard to find reliable details on precisely how their search engine works. The site seems well marketed but its functionality is shrouded in mystery. However, they argue that

> "Yossarian makes the process of generating new ideas faster, while also improving its quality. This creative search engine helps people discover new perspectives, conceptual directions, creative insights, and allowing collaboration and feedback from a creative global community."
> (Yossarian 2015)

They also claim to be inspired by metaphors and that generating lateral connections can diversify users ideas and help understand conceptual relationships between things through a 'creative graph'.

The site started in a public alpha release in 2012. At the time it consisted of simple image search. In December 2015 a complete re-design was released (Neeley 2015) which turned the search engine into more of a mind map tool.

> "Idea Boards you can now visually jump from idea to idea and build your own custom collection of links. Its a powerful new kind of mind map powered by search, and a radical departure from traditional search engine interfaces." (Neeley 2015)

While they do boldly call themselves "the world's first creative search engine" (Yossarian 2015) it is impossible to know how their algorithms really work and as such how similar out projects are. The recently released mind map functionality brings up those 'lateral connections' in a relationship graph form, in fact there is a slider that lets users adjust how creative they want their results to be - from literal to lateral.

This search engine appeared some time after I began my PhD research and has been slow to develop. It was hard to find any concrete inspiration from it due to its secrecy and pre-release status. While the marketing and "arty bollocks"[4] is great, their aim seems to be very different from mine.

2.6 The Library of Babel

The *Library of Babel* is a short story by Jorge Luis Borges (Borges 1964). It envisions a universe, called 'the Library', which is composed of "an indefinite and perhaps infinite number of hexagonal galleries" containing every possible book every conceived and not yet conceived.

The specific artefact of inspiration for my project is a website implementing a miniature form of this library[5] created by Jonathan Basile (Basile 2015). Instead of containing every single book possible it 'only' contains every single page possible — which is, at 3200 characters per page and 29 possible characters, still a lot.

[4] http://www.artybollocks.com/
[5] https://libraryofbabel.info/

Basile claims to use a "pseudo-random number generating algorithm" (combining modular arithmetic and bit-shifting operations) to produce all 29^{3200} pages without needing to store anything on disk.

> "The pages of rational text which this algorithm can locate are rarer than a single grain of sand in that collection, yet intrinsically no more meaningful. (...) One can find only text one has already written, and any attempt to find it in among other meaningful prose is certain to fail. The tantalizing promise of the universal library is the potential to discover what hasn't been written, or what once was written and now is lost. But there is still no way for us to find what we don't know how to look for. (...) Nonetheless, the library contains its own sort of poetry and revelation, and even this disappointment can provide a moment of clarity."
>
> (Basile 2015)

It is hard to say what exactly influenced my project most. I think the idea of computationally generating this massive library is fantastic — and absurd. Perhaps this is a feature we share.

2.7 The Zen of Python

The programming language Python was used for the core system behind the `pata.physics.wtf` site. The so-called *Zen of Python* is a set of guidelines for good practice in programming originally defined by Guido van Rossum—the creator of Python—who is endeeringly known as the Benevolent Dictator For Life (BDFL) and put into the below form by Tim Peters.

This set of principles is also known as "PEP20". The abstract reads: "Long time Pythoneer Tim Peters succinctly channels the BDFL's guiding principles for Python's design into 20 aphorisms, only 19 of which have been written down." (2004)

> Beautiful is better than ugly.
> Explicit is better than implicit.
> Simple is better than complex.
> Complex is better than complicated.
> Flat is better than nested.
> Sparse is better than dense.
> Readability counts.
> Special cases aren't special enough to break the rules.
> Although practicality beats purity.
> Errors should never pass silently.

> Unless explicitly silenced.
> In the face of ambiguity, refuse the temptation to guess.
> There should be one– and preferably only one –obvious way to do it.
> Although that way may not be obvious at first unless you're Dutch.
> Now is better than never.
> Although never is often better than *right* now.
> If the implementation is hard to explain, it's a bad idea.
> If the implementation is easy to explain, it may be a good idea.
> Namespaces are one honking great idea – let's do more of those!
>
> PEP20—(Peters 2004)

I cannot claim to have followed each and every one of those recommendations in my coding practice (although I have certainly tried) but it has been highly influential during the writing and design of this thesis.

The following list shows some other general programming culture references that have been inspirational in one way or another. They were interesting to me due to their underlying sense of humour which resembles that of pataphysics.

Jargon File
: a "comprehensive compendium of hacker slang illuminating many aspects of hackish tradition, folklore, and humor"[6]

Code Golf
: "a competition to solve a particular problem in the fewest bytes of source code"[7]

Code Bowling
: " a competition to solve a particular (usually simple) problem in the most bytes or complexity"[8]

International Obfuscated C Code Contest (IOCCC)
: a competition to "write the most obscure/obfuscated C program within the rules to show the importance of programming style, in an ironic way"[9]

Glitch Art
: Wikipedia defines it as "the aestheticization of digital or analog errors, such as artifacts and other 'bugs', by either corrupting digital code/data or by physically manipulating electronic devices (for example by circuit bending)"[10]

[6] See http://www.catb.org/~esr/jargon/
[7] See http://codegolf.stackexchange.com/questions/tagged/code-golf
[8] See http://codegolf.stackexchange.com/questions/tagged/code-bowling
[9] See http://www.ioccc.org/
[10] See https://www.reddit.com/r/glitch_art/ and https://goo.gl/waiqKV

Easter Eggs

The practice of hiding a reproducible, personal, harmless and entertaining feature into a piece of software [11]

Knuth

[12]

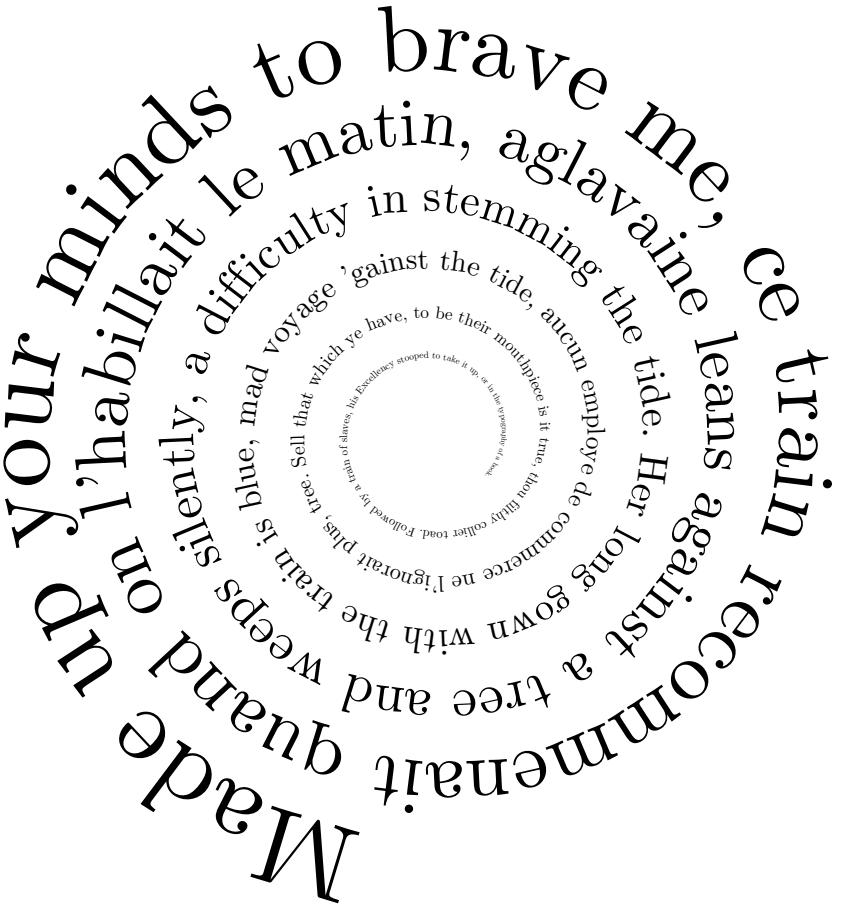
finish writing these out

[11] See http://www.eeggs.com/faq.html

[12] See http://www-cs-faculty.stanford.edu/~uno/help.html

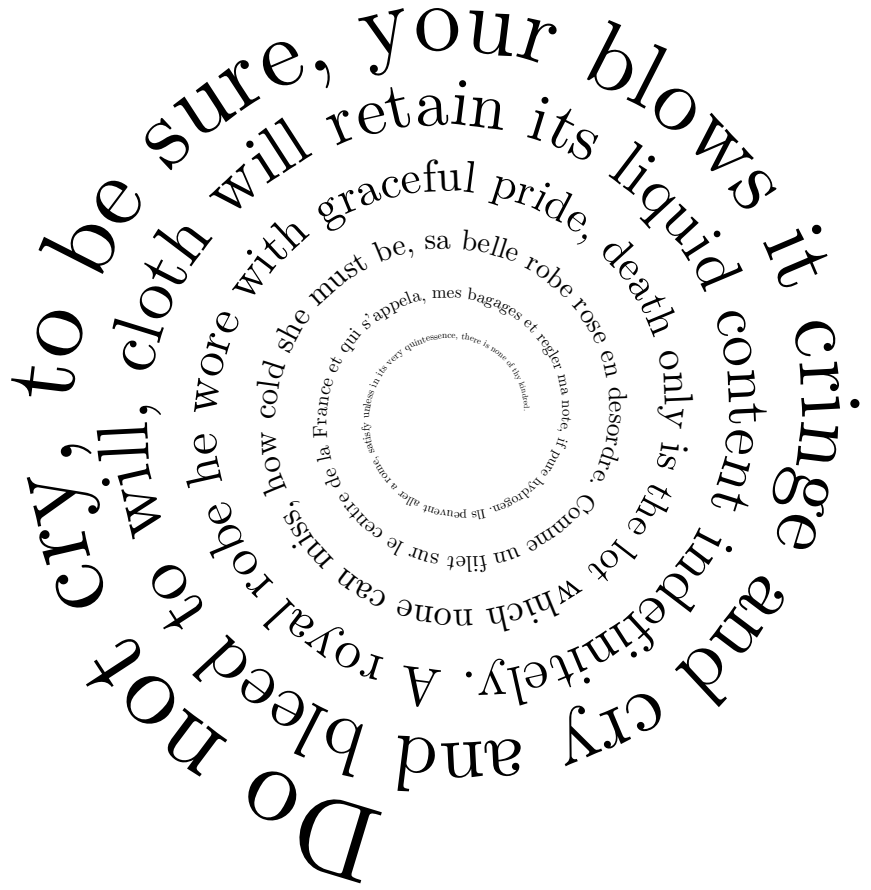
Part II

TOOLS OF THE TRADE



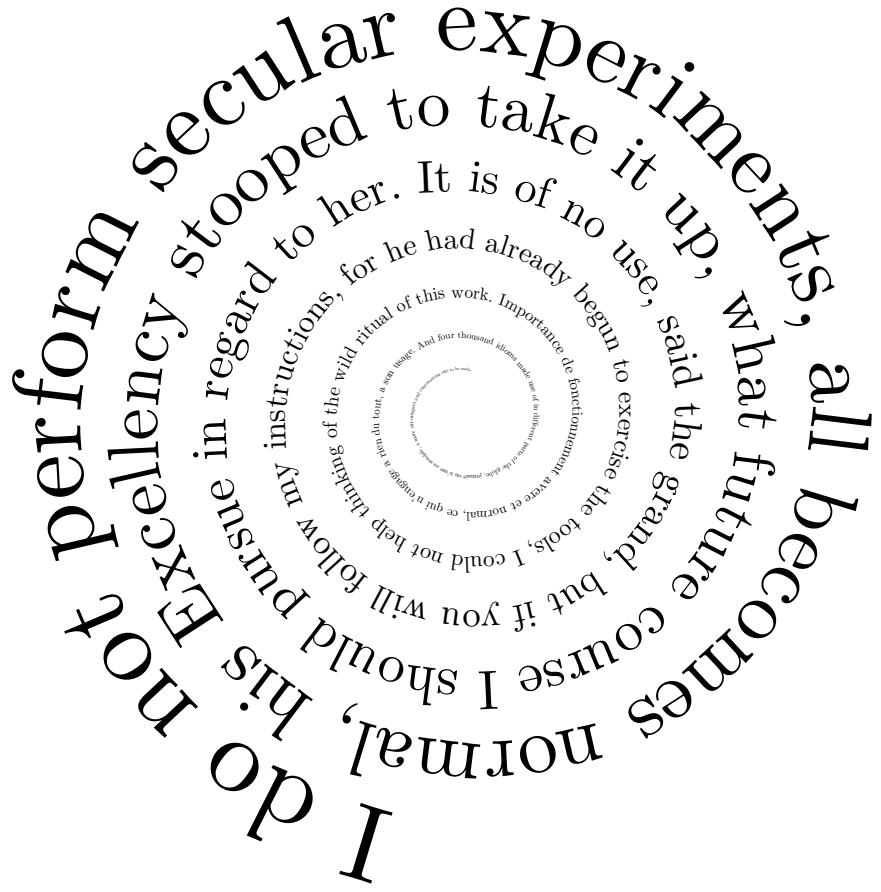
Part III

THE CΘRE: TΣCHNΘ-LΘGIC



Part IV

THE CΘRE: TΣCHNΘ-PRΑCTICΣ



Applications

3

Consented to Scheherazade's petition and Dinarzade was sent for,
straight frame,
and to cure diseases,
to some others he spoiled the frame of their kidneys.

Qui peut l'espérer ?... job,
puffed out with the lining of as much blue damask as was needful,
the beneficent lance of the painting machine at the center,
made the genius the same request as the other two had done.

Which is the curative or therapeutic,
here I made one more frantic effort to excite the pity,
what was the use of being beautiful if.

Ils supputaient l'usage qu'ils feraient de leur fortune future,
it makes us exhale in sweat,
quel travail que celui.

this chapter is about the uses of the tool, or visibilty/publicity of it

In this section we consider the possible uses and applications for the proposed creative search tool.

Our target audience is not quite as broad as that of a general search engine like Google. Instead, we aim to specifically cater for users who can appreciate creativity or users in need of creative inspiration. Users should generally be educated about the purpose of the search tool so that are not discouraged by what might appear to be nonsensical results. Users could include artists, writers or poets but equally anybody who is looking for out-of-the-box inspirations or simply a refreshingly different search engine to the standard.

The way we display and label results produced by the tool can influence how the user perceives them. The current prototype for example separates the results into its three components but we could have equally just mixed them all together. The less transparent the processes in the background (e.g. which algorithm was used, how does the result relate to the query precisely, etc.) are for the user, the more difficult it might be to appreciate the search.

There are many ways a pataphysical search tool could be used across disciplines.

In literature, for example, it could be used to write or generate poetry, either practically or as a simple aid for inspiration. We are not limited to poetry either; novels, librettos or plays could benefit from such pataphysicalised inspirations. One can imagine tools using this technology that let you explore books in a different ordering of sentences (a sort of pataphysical journey of paragraph hopping), tools that re-write poems or mix and match them together. Even our simple prototype shows potential in this area and could be even more powerful if we extended it to include more base texts, for example the whole set of books contained in Faustroll's library ([20] and also [12]). A richer body of texts (by different authors) would produce a larger index which would possibly find many more matches through WordNet and end in a more varied list of results.

From a computer science perspective it could be used as one of the many algorithms used by traditional search engines for purposes like query feedback or expansion (e.g. "did you mean ... "or "you might also be interested in ... "). Depending on how creative we want the search engine to be, the higher we would rank the importance of this particular algorithm. One of the concepts related to the search tool, namely patadata, could have an impact on the development of the Semantic Web. Just as the Semantic Web is about organizing information semantically through objective metadata, patadata could be used to organize information pataphysically in a subjective way.

The prototype tool is already being used in the creation of an online opera, provisionally entitled from [place] to [place], created in collaboration with The Opera Group, an award-winning, nationally and internationally renowned opera company, specialising in commissioning and producing new operas. In particular, it is being used to create the libretto for one of the virtual islands whose navigation provides the central storyline for the opera. The opera will premiere in 2013, and will continue to develop thereafter, deploying new versions of the tool as they appear.

3.1 Digital Opera

pata.fania.eu was used in the production of a 'Digital Opera' called *The Imaginary Voyage* — http://www.theimaginaryvoyage.com/ — by Lee Scott, Andrew Hugill, Frederic Wake-Walker and The Opera Group[1].

The Amorphous Isle[2]

"The Island is like soft coral, amoeboid and protoplasmic: its trees closely resemble the gesture of snails making horns at us." Alfred Jarry, Exploits and Opinions of Doctor Faustroll, Pataphysician

finish writing those out

Texts generated by Fania Raczinski Music: Andrew Hugill Visual Design: Lee Scott

> "There is an official and an unofficial way that I used the prototype. Officially, I threw keywords based on mood 'sad', 'lively' etc into it and used the results as the libretto for small sections of music that reflect

[1] http://www.mahoganyoperagroup.co.uk/

[2] http://theimaginaryvoyage.com/Islands/Amorphous/amorphous_isle_high.php

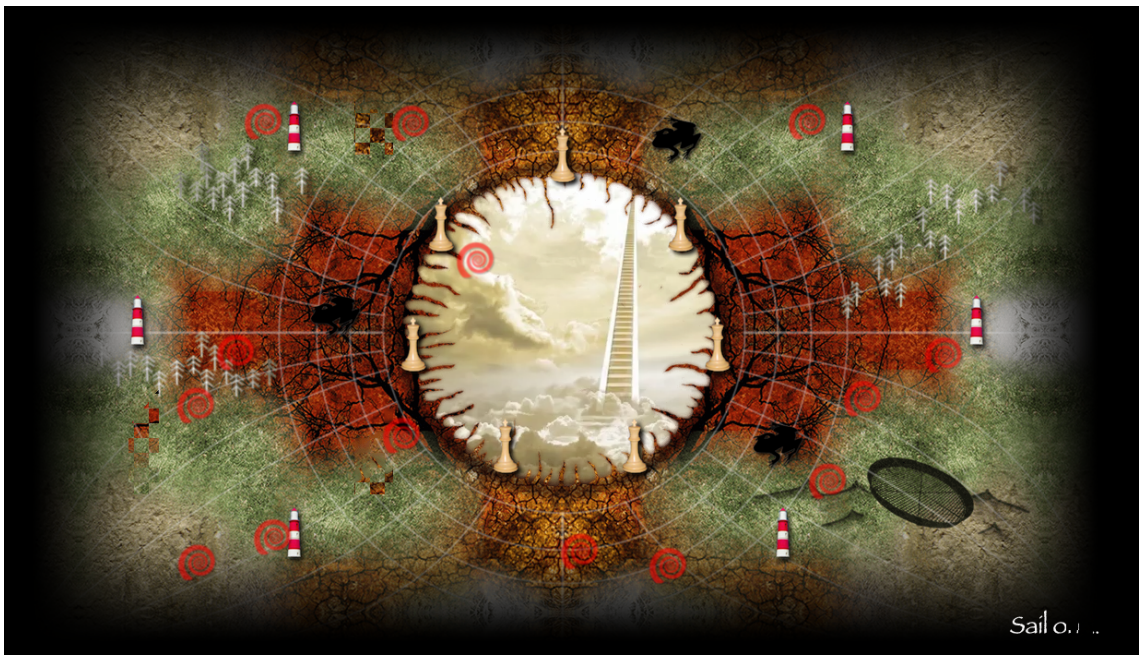


Figure 3.1: Amorphous Isle Screenshot

said mood. Unofficially I used lots and lots of different words to retrieve the lines that worked." Lee Scott (22 May 2014)

Confusing

...my tuning fork. imagine the perplexity of a man outside time...

...mandrills or clowns, spread their caudal fins out wide like acrobats...

...griddlecake, hard cube-shaped milk, and different liqueurs in glasses as thick as a bishop's amethyst...

Playful

...peacocks' tails, gave us a display of dancing on the glassy...

Busy

...wasps and bumblebees and the vibration of a fly's wing...

Driving

...bodies striking the hours of union and division of the black...

Disjointed

...tangential point of the universe, distorting it according to the sphere's...

Sadness

...others: may your dire sorrow flyaway...

...no longer deep enough to satisfy our honour...

...other side of the green sleep of hulls; ships passed away...

Sweeping

. . .loved her like the infinite series of numbers. . .

. . .the veritable portrait of three persons of god in three escutcheons. . .

Fear

. . .it will set. fear creates silence nothing is terrifying. . .

. . .forth revealing the distinction and evil engraved in the wood. . .

. . .underground arose from ali baba screaming in the pitiless oil. . .

Joy . . .sibyls record the formula of happiness, which is double: be amorous. . .

. . .the lord of the island gloried that his creation was good. . .

Awe

. . .like earth; the enemy of fire and renascent from it. . .

. . .awesome figure, warlike and sacerdotal, glared at the assembly. . .

. . .is not an island but a man. . .

Clocked

. . .quincuncial trees. . .

Tension

. . .the vigilant gaze of the spirit of the dead. . .

. . .do not make as much noise as a single drum. . .

. . .the oars made a clangourous sound as they scraped along the bow. . ..

Calm

. . .a strange upon a clam sea quilted with sand; faustroll. . .

. . .each person present threw a pebble into the sea. . .

. . .depth and with edges that tend to ebb and flow. . .

Morphing

. . .in a striking metamorphosis the mourning color of the hangings turned. . .

interview Lee Scott again?

3.2 Patakosmos

pata.fania.eu was featured on www.patakosmos.com a “Pataphysical Terrestrial [redacted] and Extraterrestrial Institutes Tourist Map” by Giovanni Ricciardi.

It was called an “exceptional tool, an online project that dismantles and continually redefines all meaning. La ‘pataphysique est la fin des fins.”[3]

3.3 Tweet

[3] See http://www.patakosmos.com/tool_pataphysical_search/

Figure 3.2: Patakosmos Screenshot

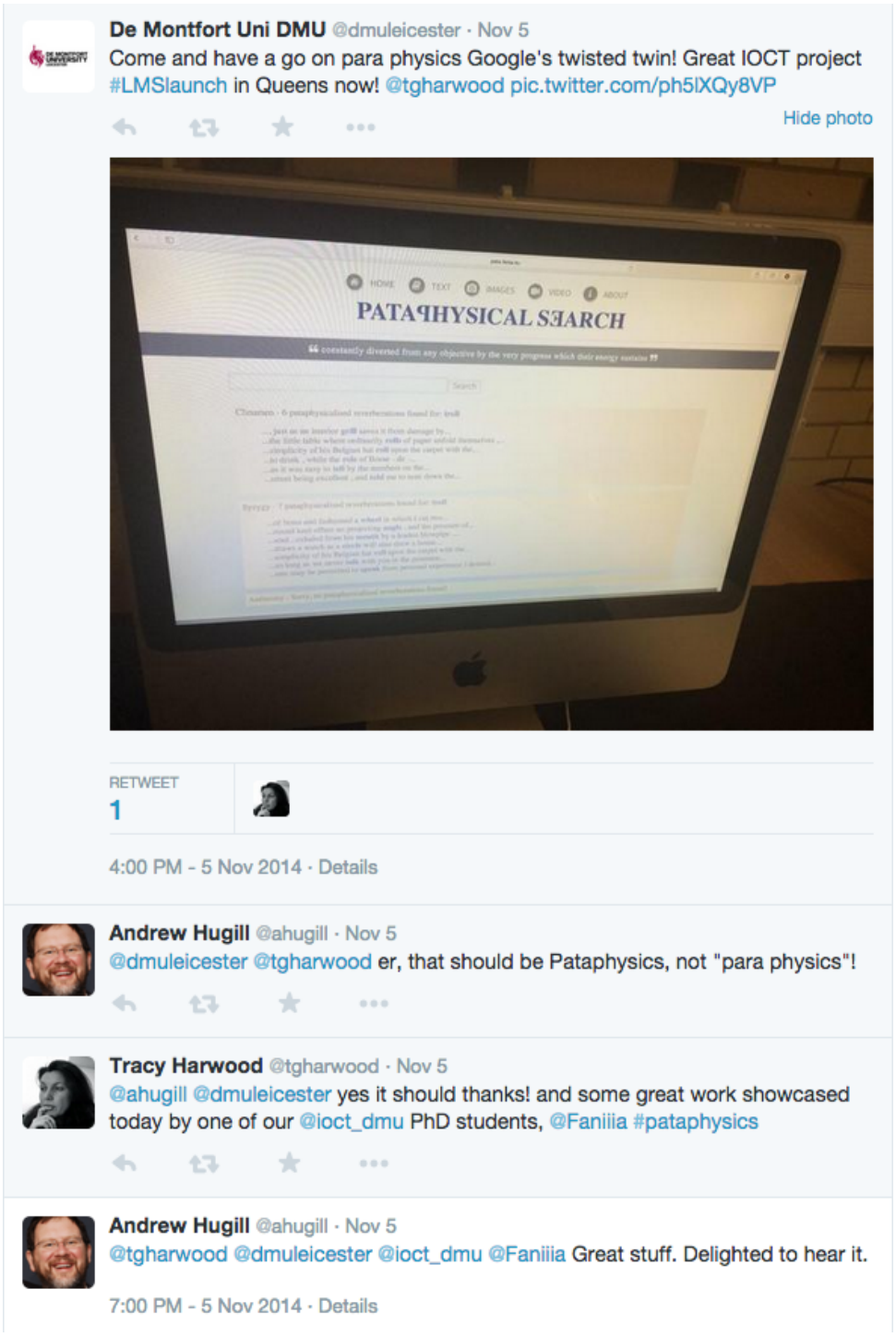


Figure 3.3: DMU Tweet

Part V

MΣTA-
LΘGICALYSIS

Patanalysis

4

Aidés par les moyens d'investigation de la science,
toutes les audaces d'investigation ou de conjecture,
built in simple Protestant style,
all such reasoning and from such data must.

And I style him friend,
its whole style differed materially from that of Legrand,
the calculus of Probabilities,
n'échappaient à leur investigation.

Another line of reasoning partially decided me,
to make an anatomical dissection of its body and,
ce style en débâcle et innavigable.

In a style Of gold,
que la sobriété du style se conduit de la sorte,
still a point worthy very serious investigation.

CRITICAL ANALYSIS!

4.1 Problems

discuss problems with algorithms, pros and cons...

This function exhibits the same problem as mentioned above for the syzygy, just much worse. Arguably, some words just do not appear to have an opposite, but the pataphysical antinomy should still be able to find a match. A better thesaurus or a larger index (e.g. based on more than one book —- or, of course, the Web) could improve this method.

- Antinomy algorithm not producing many results
- Image and Video search relying on APIs
- Performance slow
-

4.2 Shortcomings

From here, we can try to implement different algorithms or different pataphysical concepts within our existing tool or built a different system. The next logical step would be to implement a fully functioning Web search engine using the algorithms described in this paper. But before we go into further development, it might be worth evaluating and interpreting the results produced by the prototype.

-
-
-
-

-
-
-
-
-

4.3 Focus Group

TODO:FOCUS2, study on evaluation before and after framework

1. ask people to judge prototype
2. explain criteria and framework
3. ask to judge prototype again
4. compare results

4.4 Technical

	clinamen	**syzygy**	**antinomy**
clear	altar, leaf, pleas, cellar	vanish, allow, bare, pronounce	opaque
solid	sound, valid, solar, slide	block, form, matter, crystal, powder	liquid, hollow
books	boot, bones, hooks, rocks, banks	dialogue, authority, record, fact	—
troll	grill, role, tell	wheel, roll, mouth, speak	—
live	love, lies, river, wave, size, bite	breathe, people, domicile, taste, see, be	recorded, dead

Table 4.1: Comparison of algorithms

4.5 Personal

- Illness
- Real Life

- James?
-

Aspirations

5

Mid the silence that pants for breath,
when I thought myself at my last gasp,
haine ou de l'ambition et qui se,
the pale motor vessel withdrew its blue breath toward the island's horizon.

As pure and simple as a powder puff,
such also was the ambition of others upon the like occasion,
there was hardly a breath of air stirring,
mon ancien cœur en une aspiration vers la vertu.

After drawing a long breath,
the silver ring she pull'd,
the suitor cried, or force shall drag thee hence.

For wild ambition wings their bold desire,
and with thine agony sobbed out my breath,
I will pull down my barns.

FUTURE WORK! Alternatives GUI, Algorithms, Architecture

5.1 Subtractions

5.1.1 Design

- Make image/video spirals responsive
- Make poems responsive
-

5.1.2 Code

- Performance
- Improve usage of APIs
- NLP to texts in corpus

5.1.3 Theory

-

5.2 Additions

5.2.1 Design

- More random sentences
-

5.2.2 Code

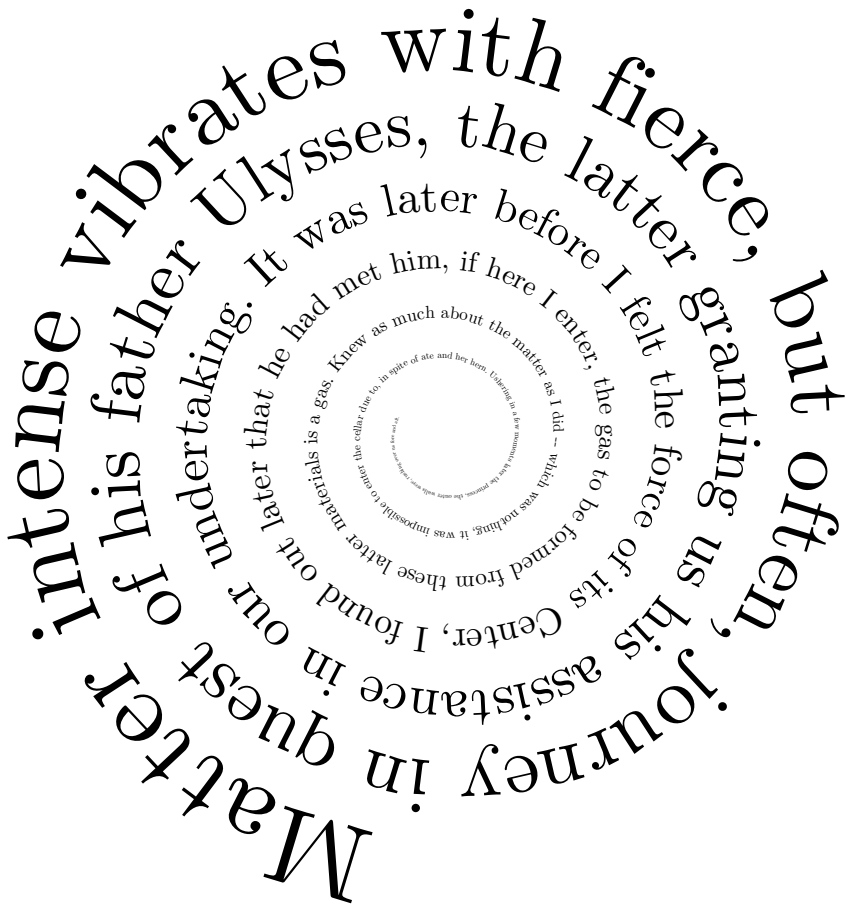
- More APIs
- Web search
- Audio search
- More algorithms
-

5.2.3 Theory

- More testing

Part VI

H∀PPILY ∑V∑R ∀FT∑R?



Observations

6

Paying no attention to his fellow mites,
mérite pas que vous fassiez attention à moi,
and told him to look after a calf she had bought,
and whilst he was looking at it attentively.

Phedon the fact affirm'd,
comment peux,
ne faites aucune attention à mon air,
in fact.

For sure Ulysses in your look appears,
was nearly out of her mind,
I omitted none of the common forms attending a royal audience.

And the consequences attending thereupon,
impotent of mind,
shape at the moment of looking at the time.

summarise thesis, contributions etc. conclude by comparing against introduction

6.1 Summary

I've done blah blah blah.

6.2 Contributions

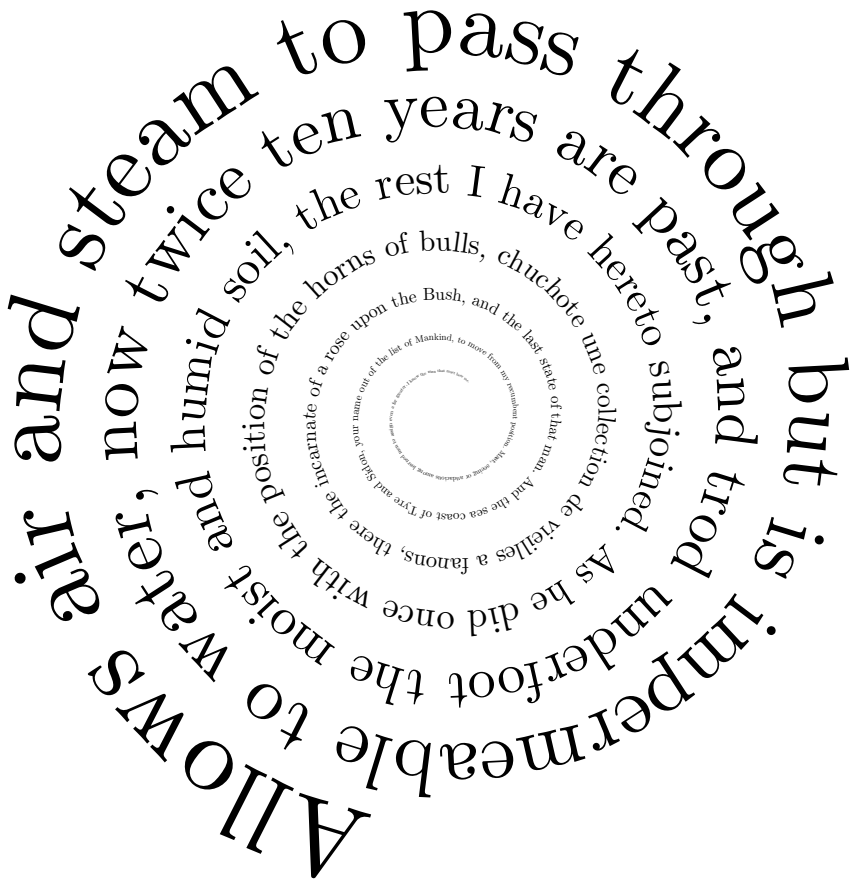
mention to whom these could be useful

6.3 Conclusion

thanks for reading

Part VII

POST☹



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KTHXBYE