

TEACHING CREATIVE WRITING WITH PYTHON

Adam Parrish

Chief Software Architect, Socialbomb

Adjunct, NYU/ITP

<http://www.decontextualize.com/>

Presentation given at OSCON 2011

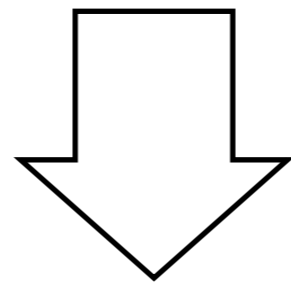
THIS PRESENTATION IS ABOUT

Reading and Writing Electronic Text,
<http://rwet.decontextualize.com/>

which is a course offered at NYU's ITP.
<http://itp.nyu.edu/>

“This course introduces the Python programming language as a tool for reading and writing digital text.”

COMPUTER PROGRAMS



POETRY

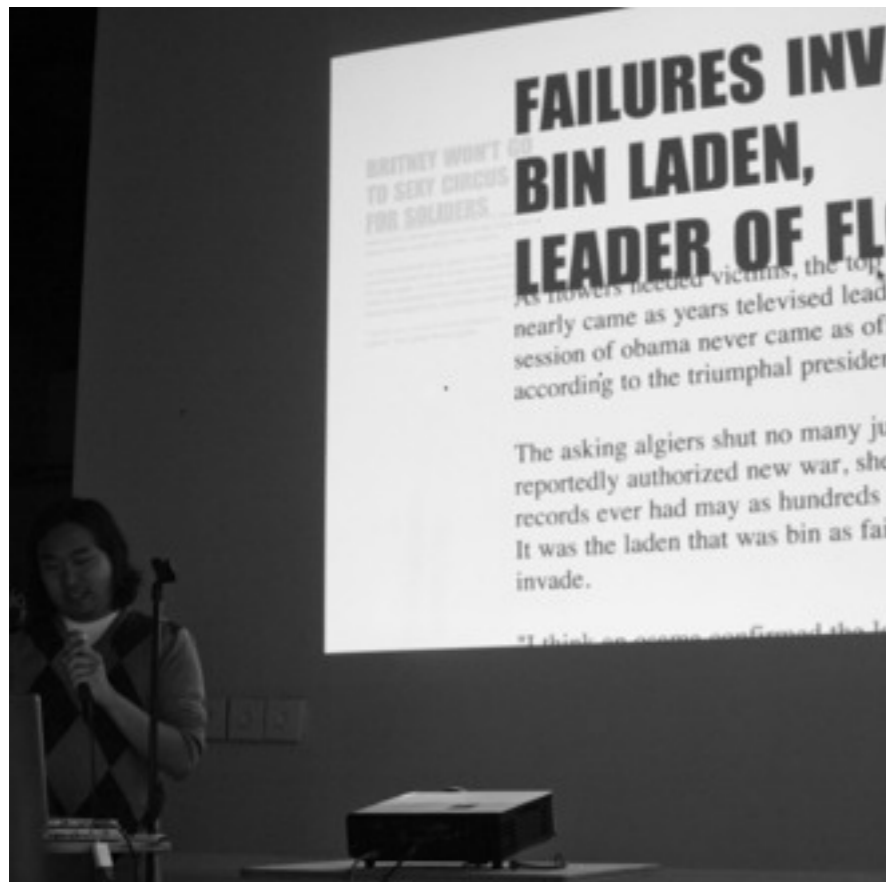


Photo credits: Aaron Uhrmacher, Rob Dubbin

BY THE END OF THIS PRESENTATION

your opinion that Python is an excellent language for text processing will be reinforced;

you will have some new ideas about how to incorporate programming in the classroom;

and you will be convinced that creative writing and programming are in love.

WHAT THE COURSE COVERS

- ▶ Using UNIX command-line tools (redirection, pipes)
- ▶ Python: Filtering lines of text
- ▶ Python: Building data structures from text
- ▶ Regular expressions
- ▶ Object-oriented programming
- ▶ Getting text from the web
- ▶ N-gram analysis; Markov chains; context-free grammars

WHAT THE COURSE DOES NOT COVER

typography and layout

narrative

“interactive” text

natural language processing

RELEVANT WORK

BERRRIGAN, SONNETS

LXV

Dreams, aspirations of presence! Innocence gleaned,
annealed! The world in its mysteries are explained,
and the struggles of babies congeal. A hard core is formed.
Today I thought about all those radio waves
He eats of the fruits of the great Speckle bird,
Pissing on the grass!
I too am reading the technical journals,
Rivers of annoyance undermine the arrangements
Someone said "Blake-blues" and someone else "pill-head"
Meaning bloodhounds.
Washed by Joe's throbbing hands
She is introspection.
It is a Chinese signal.
There is no such thing as a breakdown.

XVI

Into the closed air of the slow
Warmth comes, a slow going down of the Morning Land
She is warm. Into the vast closed air of the slow
Going down of the Morning Land
One vast under pinning trembles doom ice
Spreads beneath the mud troubled ice
Smother of a sword
Into her quick weak heat. She
Is introspection. One vast ice laden
Vast seas of doom and mud spread across the lake. Quick
heat,
Of her vast ice laden self under introspective heat.
White lake trembles down to green goings
On, shades of a Chinese wall, itself "a signal."
It is a Chinese signal.

MELNICK, *PCOET*

1.

thoeisu

thoiea

akcorn woi cirtus locqvump

icgja

cvmwoflux

epaosieusl

~~cirtus locqvump~~

a nex macheisoa

7.

rkels, rtade

lier forllwoelf

Vnth weman

I slei nouthvorou

ialquivir bpriemsouo

alvoerid

abourgodsreis

haleit souvytl

andlgognest siemxcmt

amoerlsoerr

16.

weracki

dciece

hajf wet pbori

eitusic at foerual bif

thorus

t'inalie thodo

to ~~tala~~

ienstable

ate sophoabl

thoeisu

thoiea

akcorn woi cirtus locqvump

icgja

cvmwoflux

epaosieusl

~~cirtus locqvump~~

a nex macheisoa

BERNSTEIN, *1-100*

```
for i in range(1, 101):  
    print i
```

THEORY

PADGETT, CREATIVE

READING

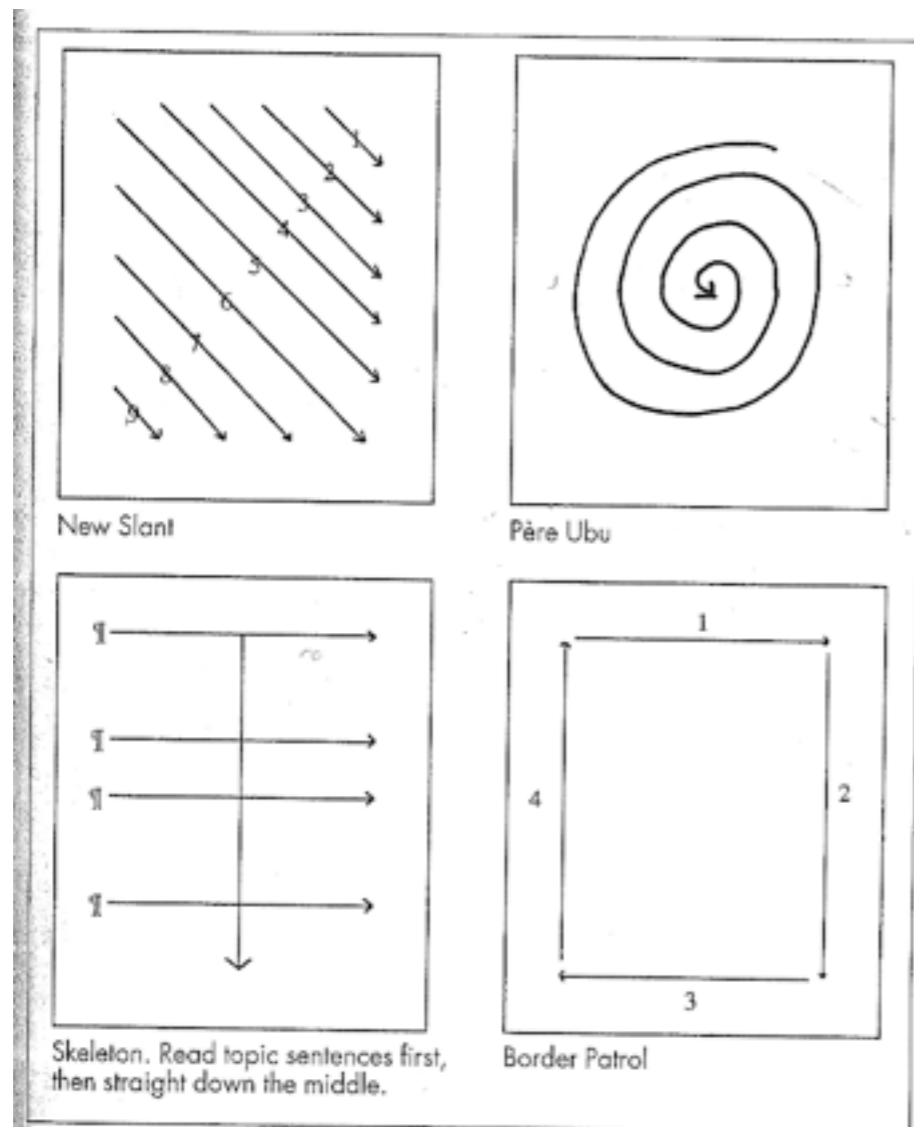


Figure 18. Four reading patterns.

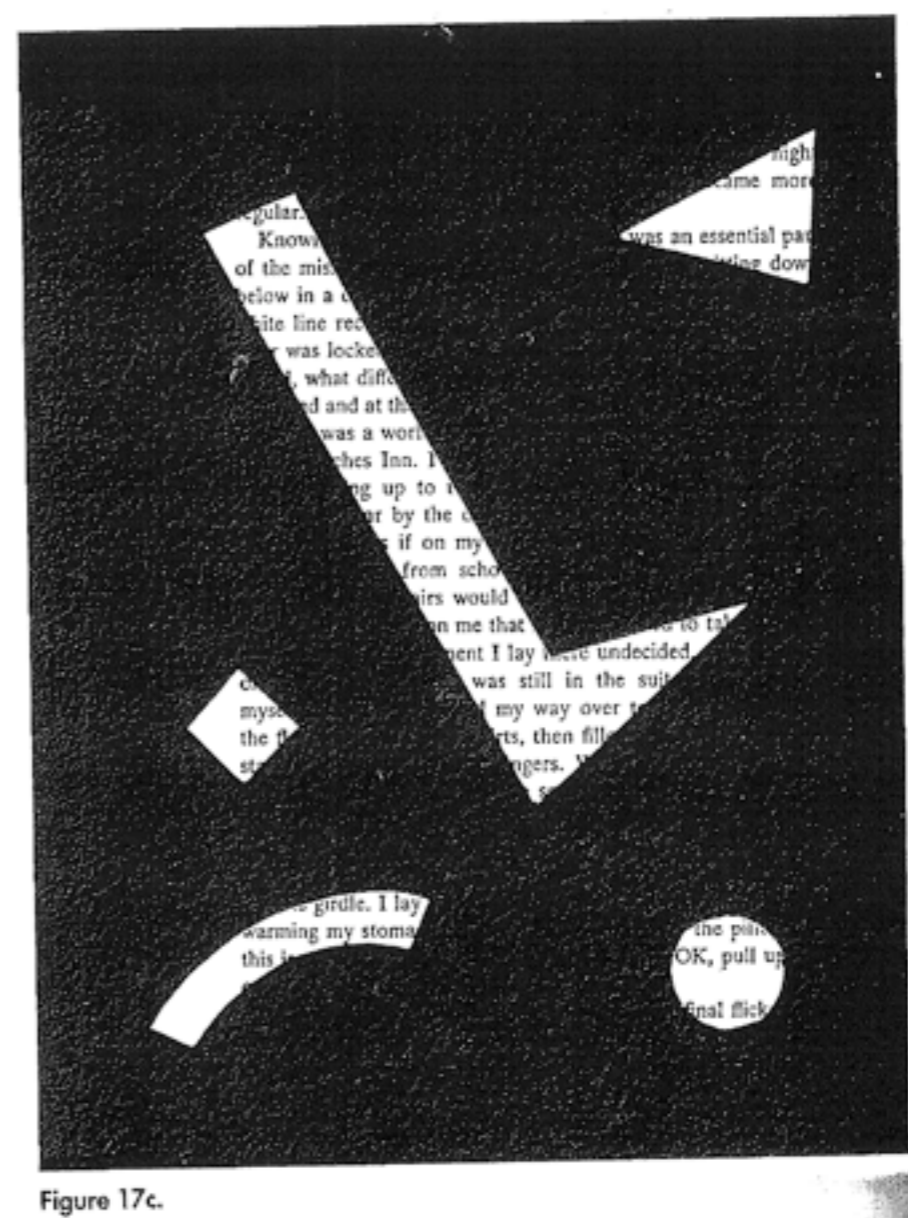
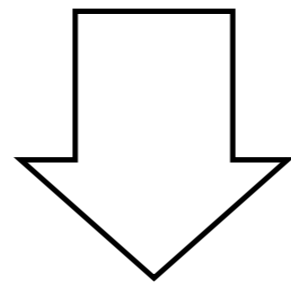


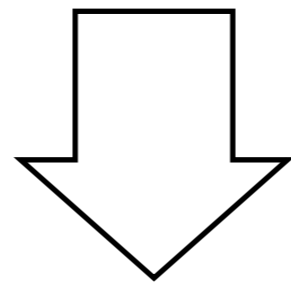
Figure 17c.

CREATIVE READING



CREATIVE WRITING

DECONTEXTUALIZATION



JUXTAPPOSITION

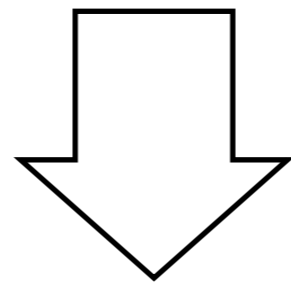
THE AFFORDANCES OF DIGITAL TEXT

Computers give us tools for processing text that we haven't had before.

Can a computer program “read” a text? Can it “write” one?

What are the qualities of procedurally generated text? How does it differ from “intention-typical” writing?

POETS



PROGRAMMERS

UNITS OF TEXT

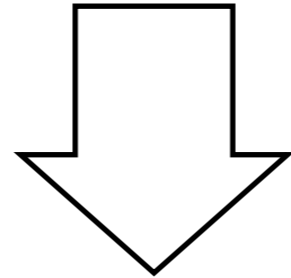
CHARACTER

LINE

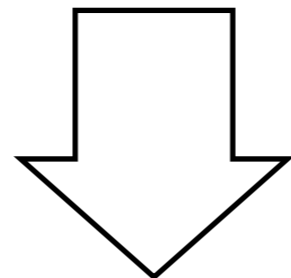
FILE

CODE

INPUT STREAM



PROGRAM



OUTPUT STREAM

Rose, harsh rose,
marred and with stint of petals,
meagre flower, thin,
spare of leaf,

more precious
than a wet rose
single on a stem --
you are caught in the drift.

Stunted, with small leaf,
you are flung on the sand,
you are lifted
in the crisp sand
that drives in the wind.

Can the spice-rose
drip such acrid fragrance
hardened in a leaf?

STDIN, STDOUT, PIPES, REDIRECTION

```
$ sort <sea_rose.txt | tail -6 | tr aeiou e  
spere ef leef,  
then e wet rese  
thet dreves en the wend.  
yee ere ceeght en the drefht.  
yee ere fleng en the send,  
yee ere lefted
```

SIMPLEST POSSIBLE PYTHON TEXT FILTER

```
import sys
for line in sys.stdin:
    line = line.strip()
    print line
```

```
import java.io.*;
class TextTest {
    public static void main(String args[]) {
        String line;
        try {
            BufferedReader stdin =
                new BufferedReader(new InputStreamReader(System.in));
            while ((line = stdin.readLine()) != null) {
                System.out.println(line);
            }
        }
        catch (IOException e) {
            System.err.println("Error: " + e);
        }
    }
}
```

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SIMPLEST POSSIBLE PROCEDURAL POEM

```
import sys
import random

all_lines = list()
for line in sys.stdin:
    line = line.strip()
    all_lines.append(line)

random.shuffle(all_lines)
for line in all_lines:
    print line
```

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drip such acrid fragrance

that drives in the wind.
you are caught in the drift.

marred and with stint of petals,
in the crisp sand
single on a stem --
Stunted, with small leaf,
Can the spice-rose
hardened in a leaf?
than a wet rose
Rose, harsh rose,

BUILDING THE CONCORDANCE

```
import sys
words = dict()
for line in sys.stdin:
    line = line.strip()
    line_words = line.split(" ")
    for word in line_words:
        if word in words:
            words[word] += 1
        else:
            words[word] = 1

for word in words.keys():
    print word + ": " + str(words[word])
```

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and: 1
: 3
lifted: 1
flower,: 1
flung: 1
meagre: 1
single: 1
rose,: 1
in: 4
acrid: 1
stint: 1
harsh: 1
rose: 1
caught: 1
that: 1
leaf?: 1
drift.: 1
fragrance: 1
wet: 1
hardened: 1
thin,: 1
more: 1
wind.: 1
Stunted,: 1
leaf,: 2
sand,: 1
drives: 1
Rose,: 1
stem: 1
spare: 1
Can: 1
such: 1
precious: 1
with: 2
than: 1
a: 3
on: 2
crisp: 1
--: 1
of: 2
drip: 1
petals,: 1
sand: 1
spice-rose: 1
you: 3
small: 1
the: 5
marred: 1
are: 3

N-GRAM ANALYSIS AND MARKOV CHAINS

```
import ngram_count
import sys

ngram_counter = ngram_count.CharacterNGramCounter(3)
for line in sys.stdin:
    line = line.strip()
    ngram_counter.feed(line)

ngrams = ngram_counter.get_ngrams()
for ngram in ngrams.keys():
    count = ngrams[ngram]
    if count > 1:
        print ' '.join(ngram) + ": " + str(count)
```

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a	r:	3	e	s:	2		
o	f:	2	s	e,	2		
o	n	: 2	o	s	e:	4	
s	a	n:	2	w	i:	3	
h	a	r:	2	l	e:	3	
r	e	:	6	h	s:	2	
a	:	3	e	d	:	2	
t	e	d:	2	f	l:	2	
l	e	a:	3	y	o	u:	3
i	f	t:	2	e	c:	2	
t	h:	6	r	o	s:	3	
p	s:	2	e	o:	2		
o	n:	2	i	n	:	4	
u	a:	3	i	t	h:	2	
h	e	:	5	w	i	t:	2
c	r	i:	2	a	f,	2	
a	r	e:	4	s	a:	2	
t	h	a:	2	e	a	f:	3
t	h	e:	5	d	r	i:	3
a	n	:	2	d	r:	2	
a	g	r:	2	n	a:	3	
o	u	:	3	n	t:	5	
i	n:	3	r	o:	2		
e	f:	2	s	t:	2		
t	h	:	2				
a	n	d:	3				
o	f	:	2				

Rose, harsh rose,
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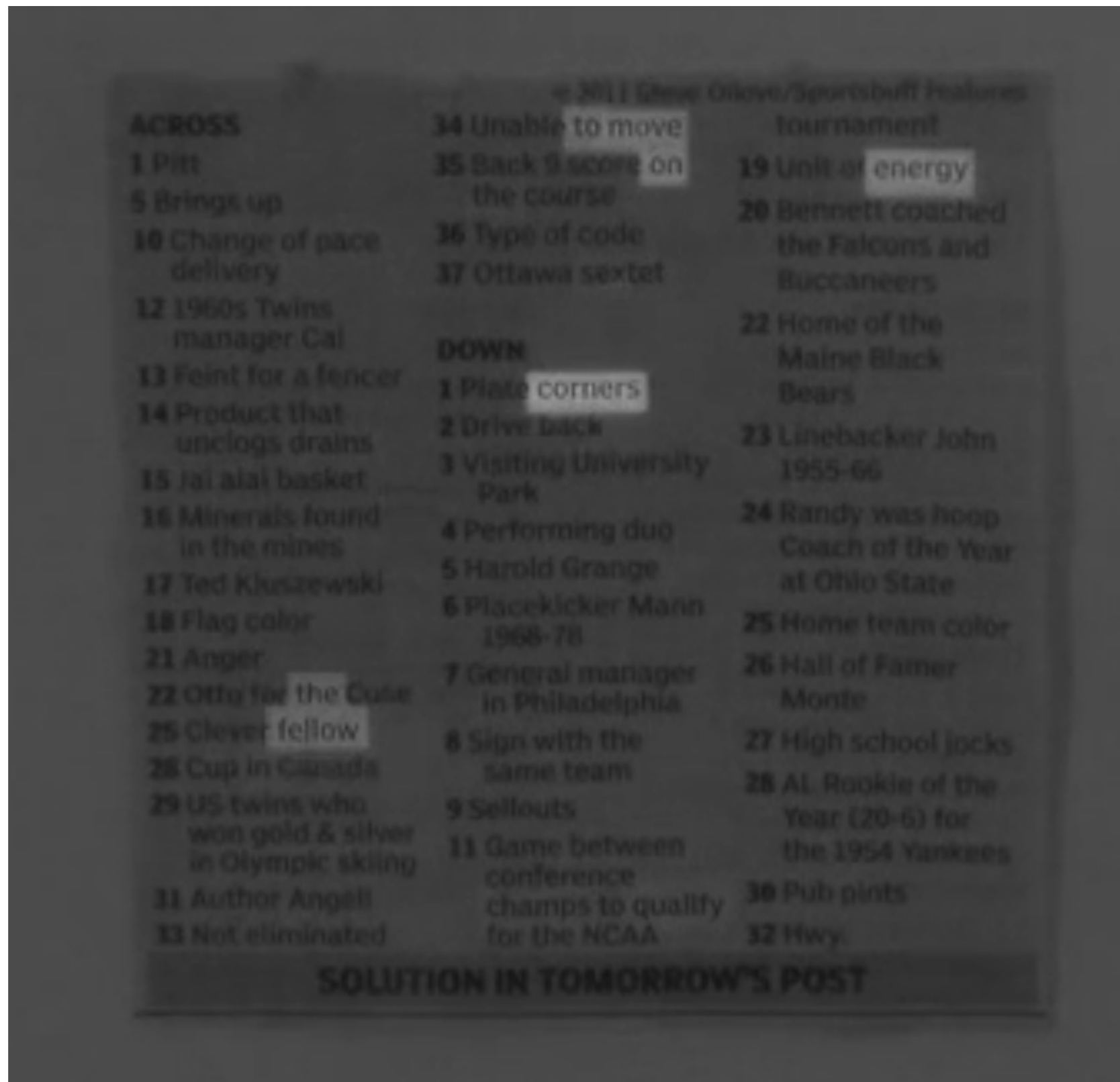
Stunted, with small leaf,
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you are lifted
in the crisp sand
that drives in the wind.

Can the spice-rose
drip such acrid fragrance
hardened in a leaf?

Rose, harsh rose, harsh rose,
you are flung on a stint of petals,
spare flower, thin,
marred and with small leaf,
marred in the with stem --
drives in the wind.

than a stem --
Stunted, with stem --
single of leaf?
more flung on a stem --
single on the sand,
you are precious
drip sand with stem --
drives in a wet rose, harsh rose,
harsh rose, hardened in Rose,
harsh rose, hardened and,
spare flung on a stint of petals,
drives in a leaf,
you are crisp such acrisp such
acrid fragrance
that drifted, wind.

OUTCOMES AND EXTRAPOLATIONS



Illuminate: Jack Kalish and Yonatan Ben-Simhon



daughter glittering c,â†ple this its
came will if hair moon by no bringing
aphrodite op[house one girls shell
mind deathless clear child

are tender fn_gotten voice
things when back down there stars dying
once crethcminded graces filled ardent
lesbos win armed high

shook honey)√^alender stand beauty mad
man light
garlands over then them dika)Ô·Çawn
outflower care turn “loÀöso√^aed,ittle
4heir friend zeus
adeÀúis flo f±rsmoÀünt`in 7¬ΣrrioÀôs 3h
ll,ef|”l)cker

Sapphic stanza and fragmented text: Alex Dodge

rhymatron.net

[How do I use this page?](#)


[home](#)

[create a rhyme](#)

[create a template](#)

[saved rhymes](#)

assault sinister

singer  crawl reviled upward

calf revive stool hers

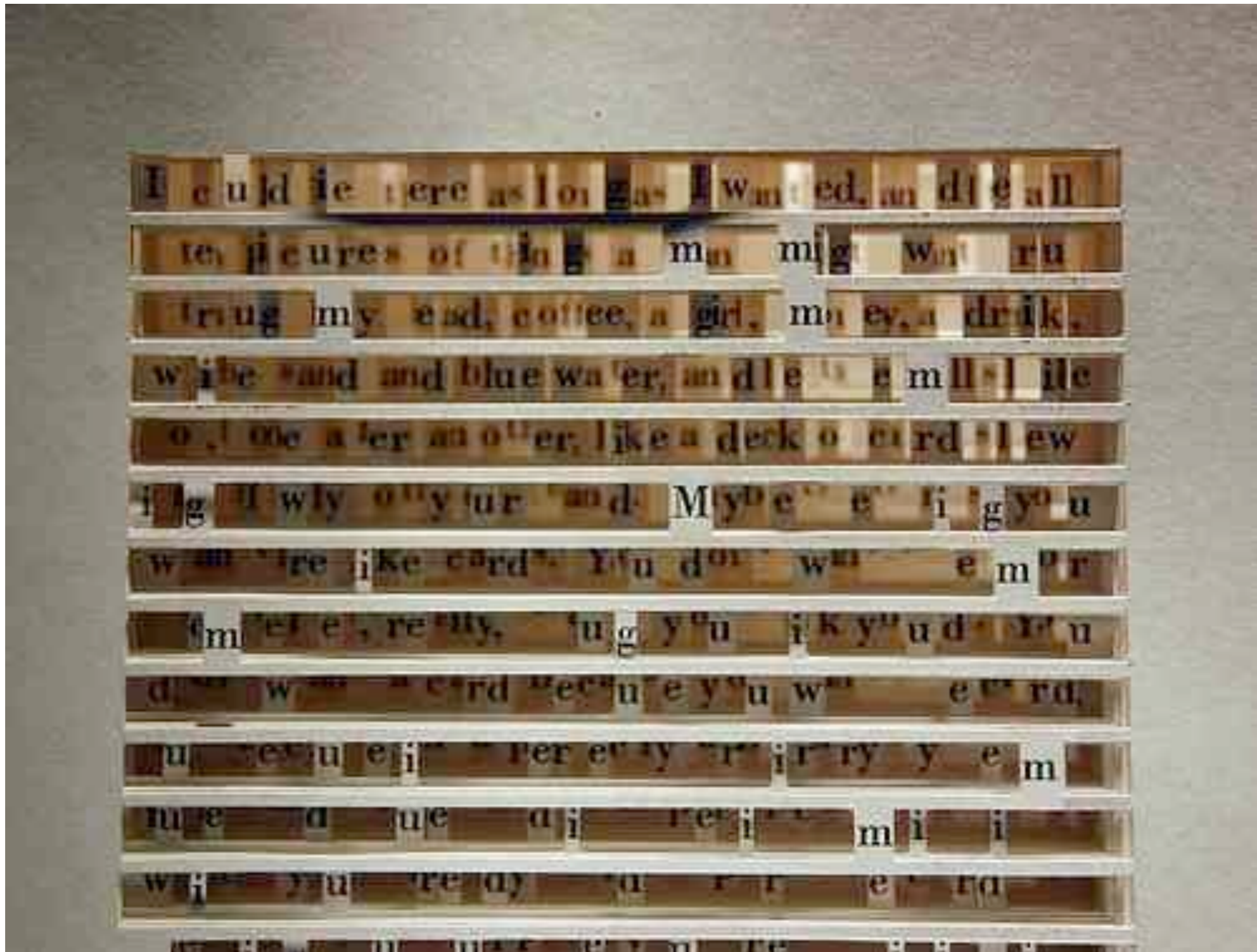
[Why do some of the words rhyme?](#)

0

[Regenerate](#)

[Create your own template.](#)

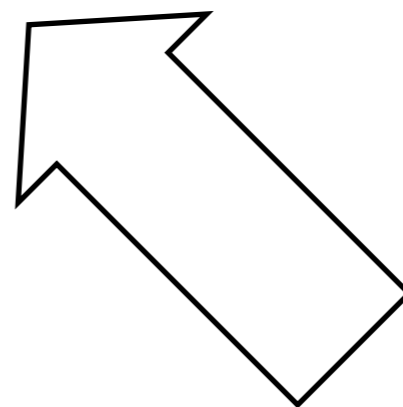
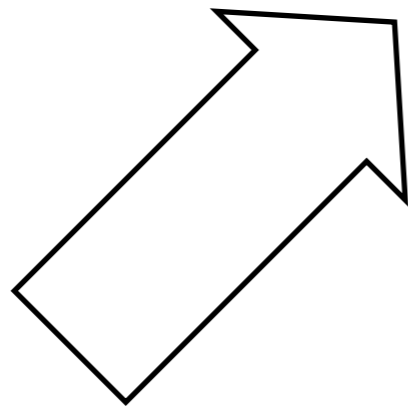
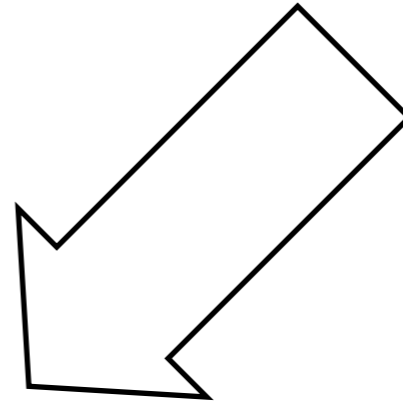
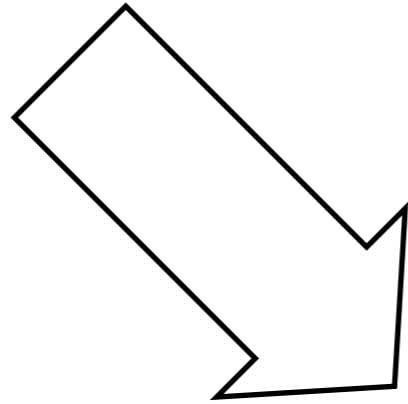
Rhymatron: Noah King



AL-gorithm: Alex Kaufmann

DESIGNERS

PERFORMERS



PROGRAMMERS

POETS

I THINK IT WORKS BECAUSE

Python is a good language for teaching about text processing;

all of the code examples work toward concrete goals; and

both the conceptual content (procedural poetics) and the technical content (text munging with Python) are deceptively applicable to other fields.

I THINK IT WORKS BECAUSE

the public performance demands a level of accountability and physicality not usually present in a programming class.

I THINK IT'S BROKEN BECAUSE

expert programmers complain the course moves too slow, while

novice programmers say the course moves too fast; all agree, however, that

it's difficult to find the right balance between the conceptual and the technical.

I WOULD LIKE TO DEVELOP

a version of this course for undergraduates
(either computer science or creative writing);

a version of this course for high school
students.

MORE INFORMATION

YOU COULD GO TO THESE URLS

<http://www.decontextualize.com/teaching/rwet/>

<http://rwet.decontextualize.com/>

<http://github.com/aparrish/rwet-examples>

...or you can ask me questions right now

END