

Designed as Designer

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Conceptual integrity is the key to good design

*The central problem . . . is to get conceptual integrity in
the design itself . . .*

—Fred Brooks, ooPSLA 2007 Keynote

In the past, good designs were typically made by single minds or two minds

If we look back then at the 19th century and the things that happened—the cartwright and the textile machinery, Stephenson (the train), Brunel's bridges and railway, Edison, Ford, the Wright brothers, etc—these were very largely the designs of single designers or, in the case of the Wright brothers, pairs.

—Fred Brooks, ooPSLA 2007 Keynote

Works of art are not made by teams, but by individuals alone

Now if we look back at the history of human production and culture, most works of art have not been made [by teams]. And that's true whether we look at literature, whether we look at music—although we have Gilbert and Sullivan, notice that one did the words and one did the music—Brunelleschi's dome, Michelangelo's tremendous works, the paintings—there are some paintings by two painters; one did the creatures and one did the landscape kinda thing, this careful division of labor—and the exceptions to the notion that most of the great works we know of were done by one mind are in fact done by two minds and not by teams.

—Fred Brooks, ooPSLA 2007 Keynote

Brunelleschi's dome is a perfect example

...modern scholars now recognize that the works of Homer...are...the works of one mind... [T]he important poem Beowulf is...a literary work...of one mind. As I say the exceptions are two, and two is a magic number. There are many, many jobs in the world that are designed for two people: the carpenter and the carpenter's helper, the electrician and the electrician's helper. And I think our Lord knew what He was doing when He made marriage work for two.

But now let's look at some of these magnificent works.

Brunelleschi's dome—and many of you have read the book—was a tremendous creation, technically beyond what people believed possible. He had to produce a working scale model before the people buying the project would even believe that it could be built. And notice the scale of this building in comparison with the surrounding buildings.

—Fred Brooks, ooPSLA 2007 Keynote



But Fred Brooks is not always right

Now, the second major reason why we do things in teams is hurry to get to market. We all know the rule that the first person to market with a totally new innovation tends to stabilize out with 40 or 45 percent of the share, and the rest is divided up among the come latelys.

—Fred Brooks, ooPSLA 2007 Keynote

TOTAL	6%
PRE-1940 1940-1974 POST-1974	6% 10% 4%
TRADITIONAL DIGITAL / HIGH-TECH	3% 8%

—Gerard J. Tellis & Peter N. Golder, *Will and Vision*

Market share of pioneers (in 2000)

TOTAL	9%
PRE-1940	8%
1940-1974	14%
POST-1974	6%
TRADITIONAL	7%
DIGITAL / HIGH-TECH	13%

Pioneers who are current leaders (in 2000)

TOTAL	19 YRS
PRE-1940 1940-1974 POST-1974	30 YRS 17 YRS 5 YRS
TRADITIONAL DIGITAL / HIGH-TECH	29 YRS 7 YRS

Years between entry of pioneer and current leader (in 2000)

First-to-Market Study Errors

- investigators usually ignored pioneers who failed completely or left the market

Many consider Gillette the pioneer in safety razors, but in fact Gillette is merely the oldest surviving player in that market. The safety razor had been patented and was sold by several companies decades before Gillette was founded, and an early design for the safety razor had been created a century before Gillette came on the scene.

First-to-Market Study Errors

- many studies suffer from self-report bias

Procter & Gamble claims to be the disposable diaper pioneer: P&G reports it “literally created the disposable diaper business in the U.S.” Yet, for decades before Pampers came along, other companies sold disposable diapers: the pioneer was a company called Chux, which introduced disposables in 1934. Pampers entered the market in 1961.

First-to-Market Study Errors

- there are definitional problems with some surveys trying to determine first-to-market advantage

Wang dominated the word processor market for a long time, where a “word processor” was defined as a “dedicated word processing machine.” Another is to define as pioneer as a company that entered a market early in its history. This is why Gillette is considered a pioneer in the safety razor business.



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Or he is not wrong but in situ examples are too messy to be perfect. As G. B. Shaw could have said, they are too true to be good.





T. S. Eliot



Ezra Pound

verse and Stendhal
emerge as verse
to amount

so
much

The typist home at teatime, who begins
~~to clear~~ away her ~~(broken)~~ breakfast, lights
Her stove, and lays out squalid food ~~in tins~~;
Prepares the room and sets the room to rights.

the
dina
les
goffers
de la
rime

Out of the window perilously spread
Her drying combinations meet the sun's last rays,
And on the divan ~~piled~~, (at night her bed),
Are stockings, dirty camisoles, and stays.

inversions
not warranted
by any real
eleg. even
metaph

A bright kimono wraps her as she sprawls
In nerveless torpor on the window seat;
A touch of art is given by the false
Japanese print, ~~purchased in Oxford Street~~.

not in
hand
ledging
hunc

I Tiresias, old man with wrinkled dug, ~~and~~
Perceived the scene, and foretold the rest,
~~Knowing the manner of these crawling bugs~~,
I too awaited the expected guest.

Too
early

A youth of ~~twentys~~, spotted about the face,
One of those simple loiterers whom we say
We may have seen in any public place
At almost any hour of night or day.

Personal

Pride has not fired him with ambitious rage,
His hair is thick with grease, and thick with scurf,
~~perhaps~~ his inclinations touch the stage -
Not sharp enough to associate with the turf.

Perhaps
be damned.

He, the young man carbuncular, ~~will stare~~
Baldly about, in "London's one cafe",
And he will tell her, with a casual air,
Grandly "I have been with Nevinson today".

all
emitted
might

Perhaps a cheap house agent's clerk, who flits
Daily, from flat to flat, with one bold stare;
One of the low on whom assurance sits
As a silk hat on a Bradford millionaire.

not
with
up
comp
+ 9/2
Gins
just

He munches with the same persistent stare,
He knows his way with women (and that's that!)
Impertinently tilting back his chair
And dropping cigarette ash on the mat.

The time is now propitious, as he guesses,
The meal is ended, she is bored and tired;
Endeavours to engage her in caresses,
Which still are unreprieved, if undesired.

First we had a couple of feelers down at Tom's place,
There was old Tom, boiled to the eyes, blind,
(Don't you remember that time after a dance,
Top hats and all, we and Silk Hat Harry,
And old Tom took us behind, brought out a bottle of fizz,
With old Jane, Tom's wife; and we got Joe to sing
"I'm proud of all the Irish blood that's in me,
There's not a man can say a word agin me").

—T. S. Eliot, *The Waste Land* (deleted material)

April is the cruellest month, breeding
Lilacs out of the dead land, mixing
Memory and desire, stirring
Dull roots with spring rain.
Winter kept us warm, covering
Earth in forgetful snow, feeding
A little life with dried tubers.

—T. S. Eliot, *The Waste Land*





Here only flame upon flame
and black among the red sparks,
streaks of black and light
grown colorless

why did you turn back,
that hell should be reinhabited
of myself thus
swept into nothingness?

why did you turn back?
why did you glance back?
why did you hesitate for that moment?
why did you bend your face
caught with the flame of the upper earth,
above my face?



(Now the cypress are swaying) (Now the lake in the distance)
(Now the view-from-above, the aerial attack of do you
remember?)—

now the glance reaching her shoreline wanting only to be recalled,
now the glance reaching her shoreline wanting only to be taken in,

(somewhere the castle above the river)

(somewhere you holding this piece of paper)



ECCE HOMO
INRI

Designed as Designer



I have grown to understand narrative as a form of contemplation, a complex and seemingly incongruous way of thinking. I come to know my stories by writing my way into them. I focus on the characters without trying to attach significance to their actions. I do not look for symbols. For as long as I can, I remain purposefully blind to the machinery of the story and only partially cognizant of the world my story creates. I work from a kind of half-knowledge.

—Robert Boswell, [The Half-Known World](#)

In the drafts that follow, I listen to what has made it to the page. Invariably, things have arrived that I did not invite, and they are often the most interesting things in the story. By refusing to fully know the world, I hope to discover unusual formations in the landscape, and strange desires in the characters. By declining to analyze the story, I hope to keep it open to surprise. Each new draft revises the world but does not explain or define it. I work through many drafts, progressively abandoning the familiar. What I can see is always dwarfed by what I cannot know. What the characters come to understand never surpasses that which they cannot grasp. The world remains half-known.

—Robert Boswell, [The Half-Known World](#)

There can be no discovery in a world where everything is known. A crucial part of the writing endeavor is to practice remaining in the dark.

*—Robert Boswell, *The Half-Known World**

You may wonder where plot is in all this. The answer . . . is nowhere I believe plotting and the spontaneity of real creation aren't compatible I want you to understand that my basic belief about the making of stories is that they pretty much make themselves. The job of the writer is to give them a place to grow.

—Stephen King, On Writing

anyone can recognize conceptual integrity in a series of things

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Hiding Place

anyone can recognize conceptual integrity in a series of things

Hiding Place

Third Dimension

anyone can recognize conceptual integrity in a series of things

Hiding Place

Third Dimension

s. e. k. s.

anyone can recognize conceptual integrity in a series of things

Hiding Place

Liquefaction

Third Dimension

s. e. k. s.

anyone can recognize conceptual integrity in a series of things

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Jerry Chapman

s. e. k. s.

anyone can recognize conceptual integrity in a series of things

Hiding Place

Liquefaction

Third Dimension

Jerry Chapman

s. e. k. s.

Retromotive

conceptual integrity = the identity of the song

Hiding Place

Liquefaction

Third Dimension

Jerry Chapman

Blue Öyster Cult

s. e. k. s.

Retromotive

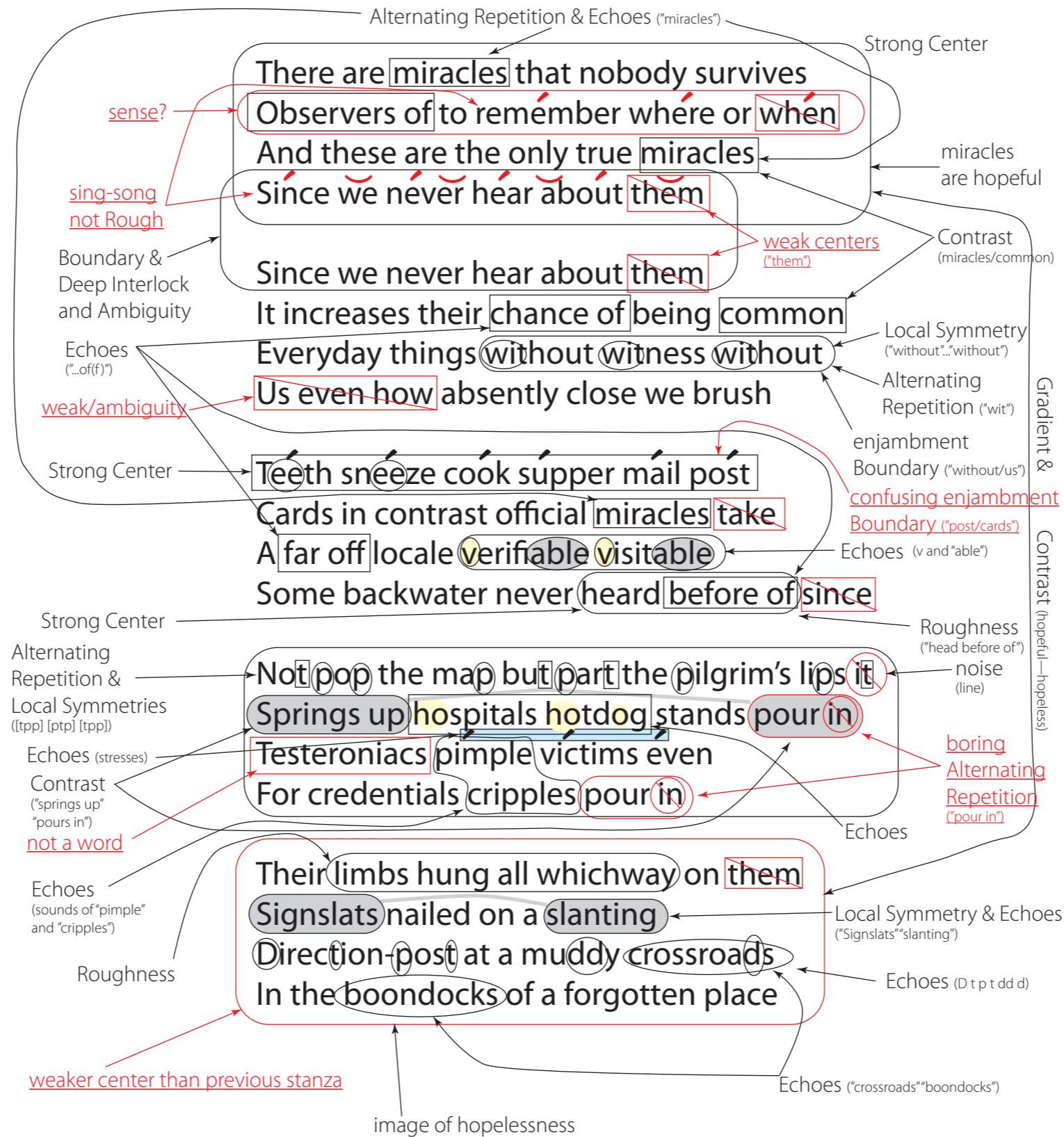
If you can recognize conceptual integrity in comparisons,
you can learn to recognize it alone



- Center: A center is any place in a poem that attracts attention; centers can arise from the action/interaction of these craft elements: stress/unstress; sound; unit of syntax; rhyme; repeated words and sounds; line; first word in a line; last word in a line; stanza; image; metaphor and other figures; title; the poem itself; historical or political elements; revealed metaphysics; meaning
- Levels of Scale: centers at all levels of scale
- Strong Center: a center related to many other centers
- Boundaries: separates a center from other centers, focuses attention on the separated center, is itself made of centers
- Alternating Repetition: strong centers repeated with alternating centers; not simple repeating; pattern with variation
- Positive Space: a center that moves outward from itself, seemingly oozing life rather than collapsing on itself
- Good Shape: a center that is beautiful by itself
- Local Symmetries: a center with another nearby which is somehow an echo

- Local Symmetries: a center with another nearby which is somehow an echo
- Deep Interlock and Ambiguity: centers that are hard to pull apart; centers that derive power from surrounding centers; centers that cannot be removed without diminishment; centers that are part of several others
- Contrast: differentiation, distinctness, discernible opposites
- Gradients: softness; qualities vary subtly, gradually, slowly
- Roughness: a certain ease; the inessential is left messy
- Echoes: family resemblance not exact replication
- The Void: stillness or literally a quiet point
- Simplicity and Inner Calm: all irrelevant parts are gone; it is as simple and spare as it can be and still retain its life; nothing more can be removed; each part seems simple and simply made
- Not-Separateness: at one with the world, and not separate from it

Lourdes



Lourdes

There are miracles that nobody survives
Observers of to remember where or ~~when~~
And these are the only true miracles
Since we never hear about ~~them~~
Since we never hear about ~~them~~
It increases their chance of being common
Everyday things without witness without
~~Us even how~~ absently close we brush
Teeth sneeze cook supper mail post
Cards in contrast official miracles ~~take~~
A far off locale verifiable visitable
Some backwater never heard before of ~~since~~
Not pop the map but part the pilgrim's lips ~~it~~
Springs up hospitals hotdog stands ~~pour in~~
~~Testeroniacs~~ pimple victims even
For credentials cripples ~~pour in~~
Their limbs hung all whichway on ~~them~~
Signslats nailed on a slanting
Direction-post at a muddy crossroads
In the boondocks of a forgotten place

sense?

*sing-song
not Rough*

*weak centers
("them")*

weak/ambiguity

*confusing enjambment
Boundary ("post/cards")*

*boring
Alternating
Repetition
("pour in")*

not a word

weaker center than previous stanza

Lourdes

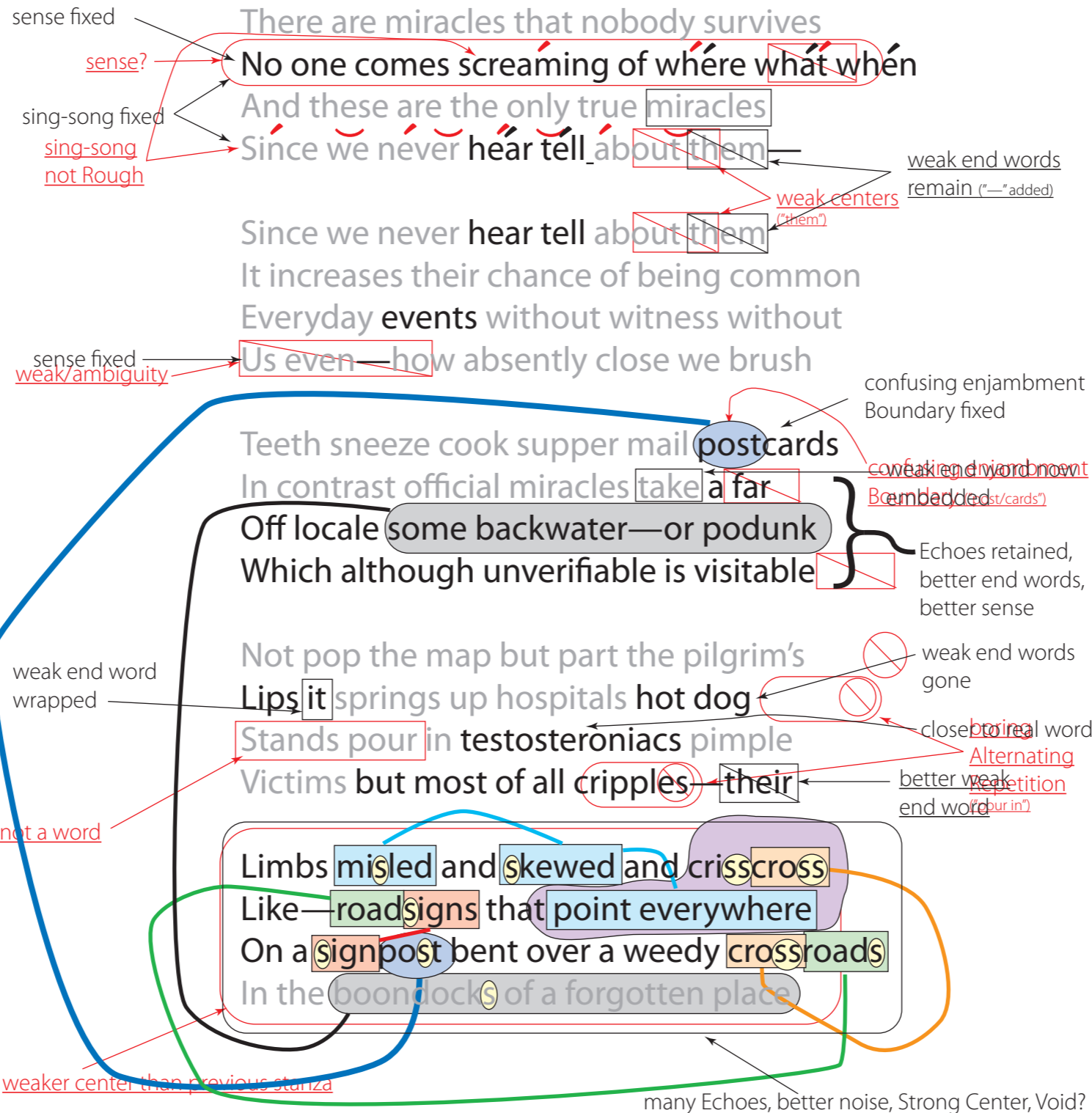
There are miracles that nobody survives
No one comes screaming of where what when
And these are the only true miracles
Since we never hear tell about them

Since we never hear tell about them
It increases their chance of being common
Everyday events without witness without
Us even how absently close we brush

Teeth sneeze cook supper mail postcards
In contrast official miracles take a far
Off locale some backwater—or podunk
Which although unverifiable is visitable

Not pop the map but part the pilgrim's
Lips it springs up hospitals hot dog
Stands pour in testosteroniacs pimple
Victims but most of all cripples—their

Limbs misled and skewed and crisscross
Like—road signs that point everywhere
On a signpost bent over a weedy crossroads
In the boondocks of a forgotten place





It is interesting that Brunelleschi receives much credit for coming up with the tension ring concept, although he only oversaw their construction. The tension rings were proposed by Neri before Filippo got involved. It affirms the benefits of good public relations and benevolent historians.

*—Jim Atkins, *Il Duomo: Brunelleschi and the Dome of Santa Maria del Fiore**





randomness

stories

randomness

stories

1957	14
1958	28
1959	16
1960	39
1961	61
1962	33
1963	23
1964	26
1965	8
1966	13
1967	9
1968	5

Roger Maris

1914	0
1915	4
1916	3
1917	2
1918	11
1919	29
1920	54
1921	59
1922	35
1923	41
1924	46
1925	25
1926	47
1927	60
1928	54
1929	46
1930	49
1931	46
1932	41
1933	34
1934	22
1935	6

Babe Ruth







Subjects told: because of a budget problem, only one of the two anagram solvers was being paid, and that one by random selection



Tom was
randomly
chosen to be
paid



Tom was
randomly
chosen to be
paid



Bill was
randomly
chosen to be
paid



Tom is better!

Tom was randomly chosen to be paid



Bill is better!

Bill was randomly chosen to be paid



Test subjects told only 1 puzzle solver was being paid, and that by random selection

Subjects broken in 2 groups

```
graph TD; A[Subjects broken in 2 groups] --> B[This group told that Tom was randomly chosen to be paid]; A --> C[This group told that Bill was randomly chosen to be paid]; B --- D[Both groups watch the same scripted performance that shows no difference in skill level]; C --- D; D --- E[This group chooses Tom as more skilled]; D --- F[This group chooses Bill as more skilled];
```

This group told that Tom was randomly chosen to be paid

This group told that Bill was randomly chosen to be paid

Both groups watch the same scripted performance that shows no difference in skill level

This group chooses Tom as more skilled

This group chooses Bill as more skilled





```
(define factorial  
  (lambda (n)  
    (if (= n 0) 1 (* n (factorial (- n 1))))))
```

```
(define factorial
  (lambda (n)
    (if (= n 0) 1 (* n (factorial (- n 1))))))
```

```
(define actorial
  (alpha (n c)
    (if (= n 0) (c 1) (actorial
      (- n 1)
      (alpha (f) (c (* f n)))))))
```

Then came a crucial discovery—one that, to us, illustrates the value of experimentation in language design. On inspecting the code for apply, once they got it working correctly, Sussman and Steele were astonished to discover that the codes in apply for function application and for actor invocation were identical! Further inspection of other parts of the interpreter, such as the code for creating functions and actors, confirmed this insight: the fact that functions were intended to return values and actors were not made no difference anywhere in their implementation. . . . But the lambda and alpha mechanisms were themselves identical, and from this Sussman and Steele concluded that actors and closures were the same concept.







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