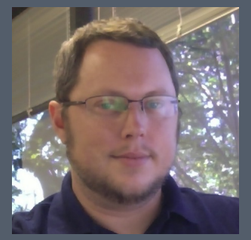

Coderetreat


Global Day of Coderetreat

Welcome!


ONE DOES NOT SIMPLY...
MISS A CODERETREAT!

Facilitators

→ **Eric Stewart** 

twitter: @ericstewart

→ **David Croley** 

twitter: @davidcroley

Schedule

1. About Coderetreat
2. Design
3. Conway's Game of Life
4. Start Sessions

What Is Coderetreat?


SO YOU MEAN
CODERETREAT
WILL IMPROVE MY
KOALAFICATIONS?

History of Coderetreat

The idea was spawned at CodeMash Conference '09 and first held on January 25, 2009

Originated by:

→ Gary Bernhardt

→ Patrick Welsh

→ Nyan Hajratwala

→ Corey Haines

Global Day of Coderetreat

This year, we have 141 participating cities, with 2,500 expected software developers!

This year's Global Day of Coderetreat is supporting CoderDojo: a worldwide, volunteer-driven movement of programming clubs for young people. Any funds not used to support GDCR will go to CoderDojo.

GDCR Supports CoderDojo

The global network of free computer programming clubs for young people.

CoderDojo is a global movement of free, volunteer-led, community based programming clubs for young people.

http://www.coderdojo.com


HELLO WORLD
FOUNDATION
hello@hwf.io
www.hwf.io

Sponsors

→ Thank the sponsors at all levels

→ Make sure you get discounts sheet!

Goals

→ Perfect Practice and Mastery

→ Learn through Pairing

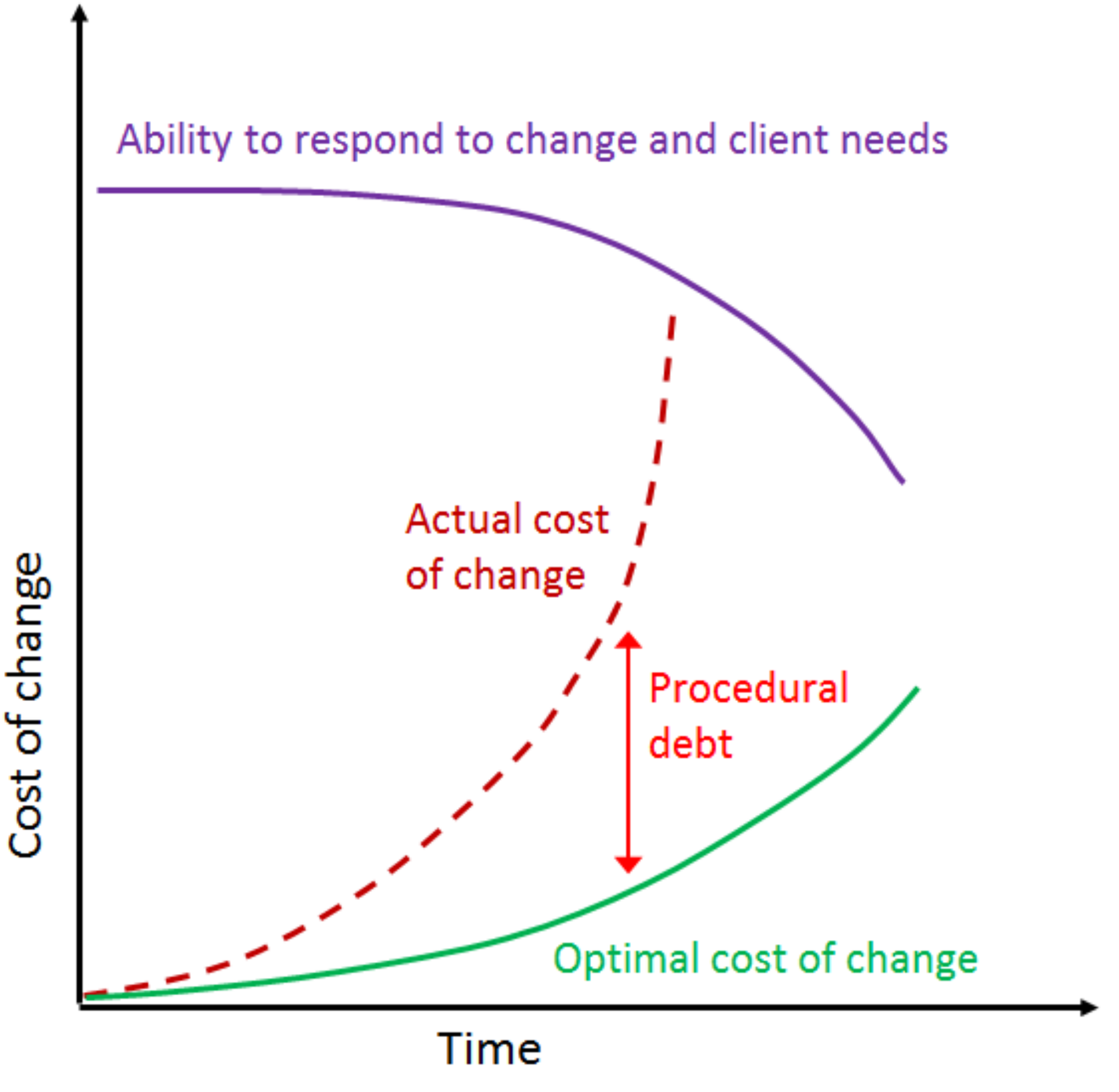
→ Extend your Comfort Zone

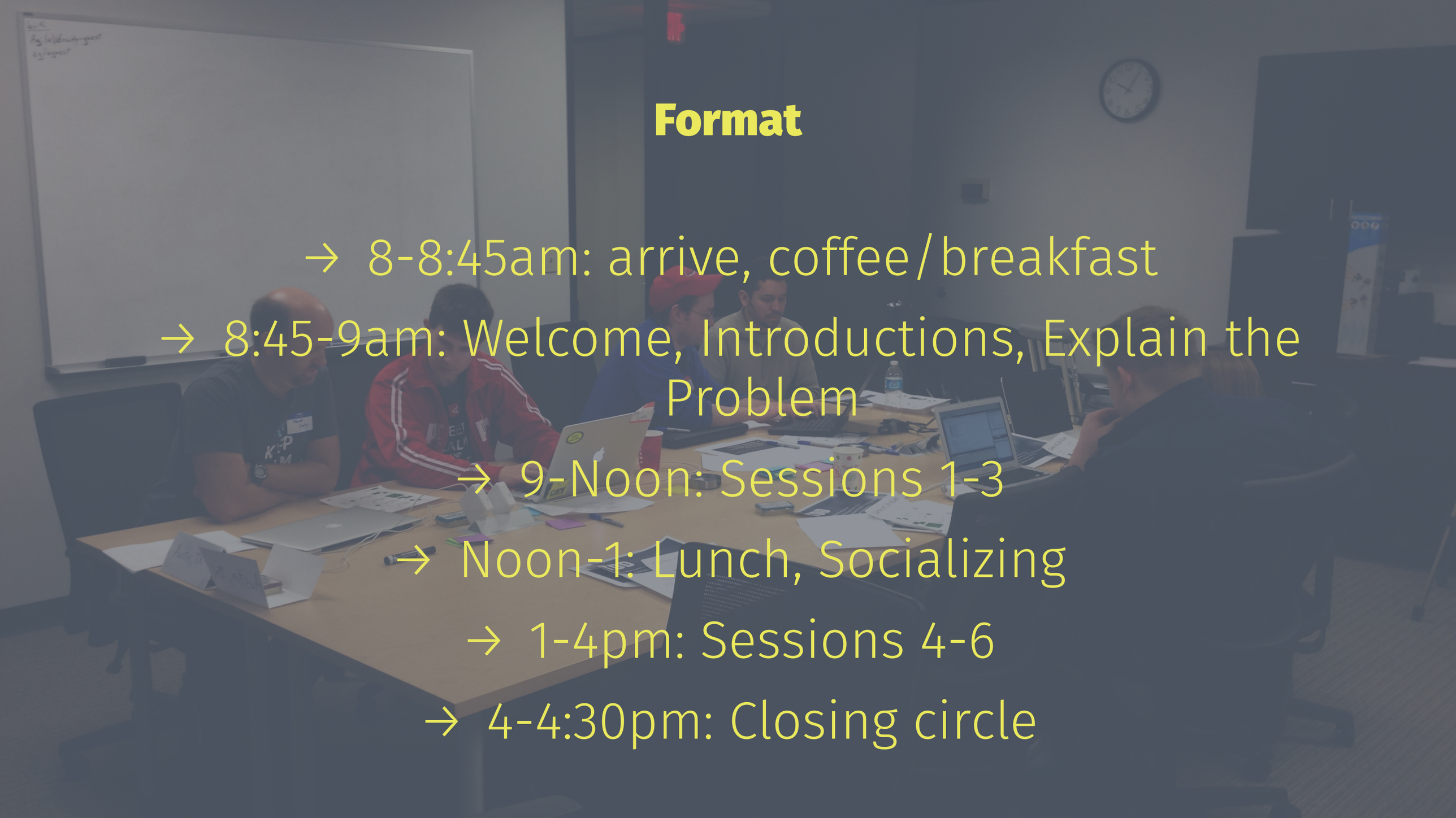
→ Experiment

→ Learn new practices

→ Think deeply about design

→ Have fun!


Ability to respond to change and client needs
Actual cost of change
Procedural debt
Optimal cost of change
Cost of change
Time



Format

→ 8-8:45am: arrive, coffee/breakfast

→ 8:45-9am: Welcome, Introductions, Explain the Problem

→ 9-Noon: Sessions 1-3

→ Noon-1: Lunch, Socializing

→ 1-4pm: Sessions 4-6

→ 4-4:30pm: Closing circle

Sessions

→ 45 minutes of coding

→ Fresh project

→ Work in pairs (decide on language)

→ Apply constraints

→ Don't try to finish!!!

→ 15 minutes retrospective/break

→ Delete your code

Pair Programming

Pair Programming

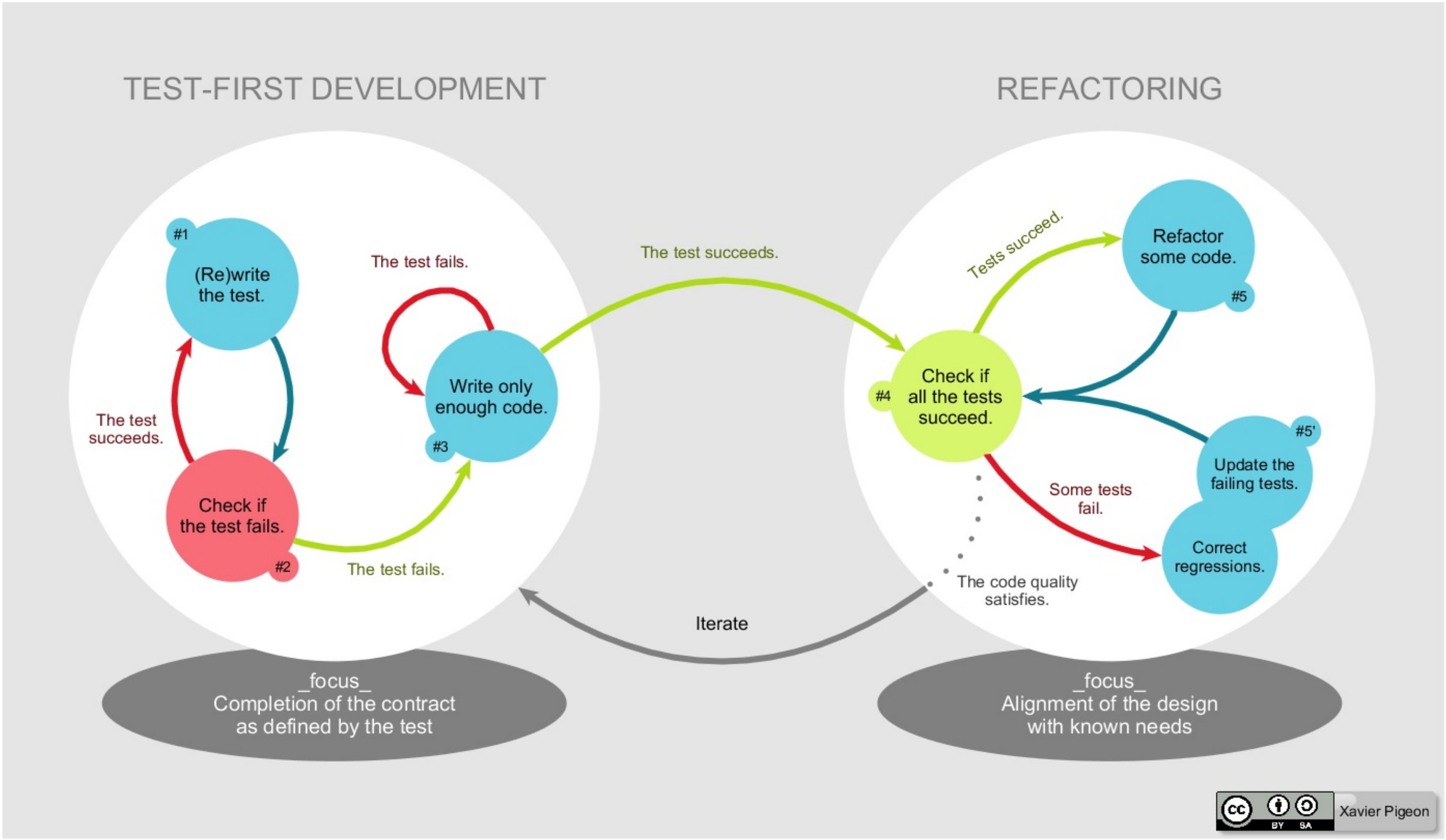
- → Two people per computer
  - → Decide on language
    - → Work together
      - → **Who** does **what**?

Pair Programming - If Hollywood Made a Movie

Test-Driven Development (TDD)

TDD Lifecycle

1. Add a test
2. Run all tests and see if the new one fails
3. Write some code
4. Run tests
5. Refactor code
6. Repeat


TEST-FIRST DEVELOPMENT
REFACTORING
#1
(Re)write the test.
The test fails.
The test succeeds.
Write only enough code.
#3
The test succeeds.
Check if the test fails.
#2
The test fails.
Tests succeed.
Refactor some code.
#5
#4
Check if all the tests succeed.
#5'
Update the failing tests.
Some tests fail.
Correct regressions.
The code quality satisfies.
Iterate
focus
Completion of the contract as defined by the test
focus
Alignment of the design with known needs
Xavier Pigeon

Participant Introductions

→ Get a name tag

→ Put your name and preferred languages on the whiteboard

Simple Design

Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.

— Antoine de Saint-Exupéry

Any intelligent fool can make things bigger, more complex and more violent. It takes a touch of genius and a lot of courage to move in the opposite direction.

— Albert Einstein.

Don't write code that guesses the future. Arrange code so that you can adapt to the future when it arrives.

— Sandi Metz

Simple Design

Simple Design is one that is easy to change.

We don't know exactly what is going to need to change. We'll never be more ignorant than we are at this moment.

The Four Rules Simple Design (Kent Beck)

1. Passes All Its Tests
2. Clearly Expresses Intent
3. Contains No Duplication
4. Small (Has No Superflous Parts)

1. Passes All Tests

Good design/factoring/etc. is useless if code doesn't do what is intended

2. Clearly Expresses Intent

Pay attention to naming, readability, and how code expresses itself

3. No Duplication

Essentially the DRY (Don't Repeat Yourself) principle of removing knowledge duplication.

Don't Repeat Yourself (DRY)

This rule isn't about code duplication; it is about knowledge duplication:

Every piece of knowledge should have one and only one representation.
— The Pragmatic Programmer[pragprog]

[pragprog] http://pragprog.com/book/tpp/the-pragmatic-programmer

4. Small

No unused code, check for missing or duplicate abstractions, look for over-abstraction.

Passes the Tests

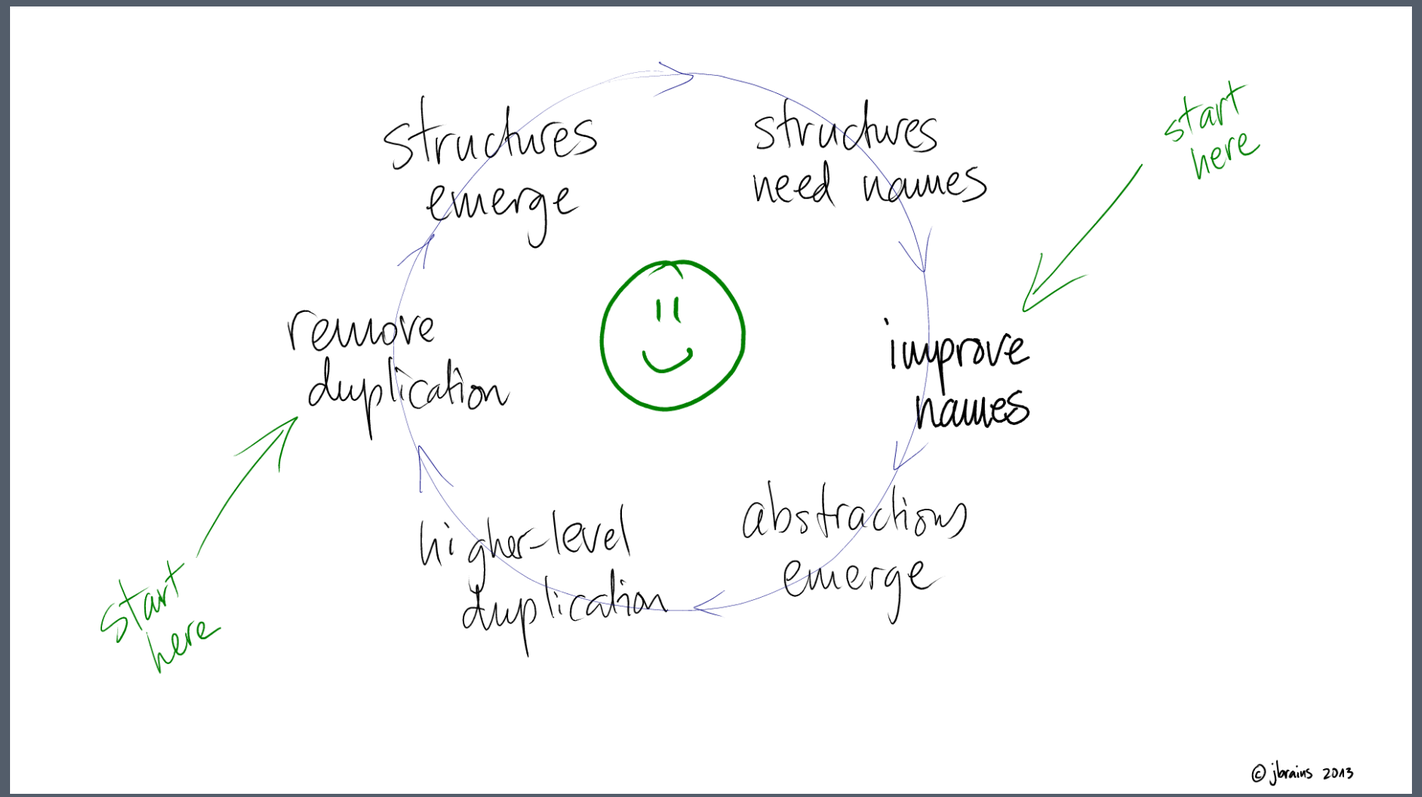
Reveals Intention

No Duplication

Fewest Elements

J.B. Rainsberger's Simple Design Dynamo

http://blog.thecodewhisperer.com/2013/12/07/putting-an-age-old-battle-to-rest/



SOLID Principles

→ **S**ingle Responsibility Principle
A module should have one, and only one, reason to change.

→ **O**pen-Closed Principle
You should be able to extend a classes behavior without modifying it

→ **L**iskov Substitution Principle
Derived objects must be substitutable for the base classes

→ **I**nterface Segregation Principle
Make fine-grained interfaces that are client specific

→ Dependency inversion principle
Depend on abstractions, not on concretions. Dependency injection is an eample.

Law of Demeter

(Principle of Least Knowledge)

A method can access either locally-instantiated variables, parameters passed in, or instance variables.

Or more simple....

One dot per statement.

Law of Demeter Example[2]

```
class Wallet
  attr_accessor :cash
end
class Customer
  has_one :wallet
end
class Paperboy
  def collect_money(customer, due_amount)
    if customer.wallet.cash < due_ammount
      raise InsufficientFundsError
    else
      customer.wallet.cash -= due_amount
      @collected_amount += due_amount
    end
  end
end
```

[2] http://www.dan-manges.com/blog/37

Law of Demeter (Improved)[2]

```ruby
class Wallet
  attr_accessor :cash
  def withdraw(amount)
     raise InsufficientFundsError if amount > cash
     cash -= amount
     amount
  end
end
class Customer
  has_one :wallet
  # behavior delegation
  def pay(amount)
    @wallet.withdraw(amount)
  end
end
class Paperboy
  def collect_money(customer, due_amount)
    @collected_amount += customer.pay(due_amount)
  end
end
```

[2] http://www.dan-manges.com/blog/37

Tell, Don't Ask[tda]

It is okay to use accessors to get the state of an object, as long as you don't use the result to make decisions outside the object.

Any decisions based entirely upon the state of one object should be made 'inside' the object itself.

[tda] http://c2.com/cgi/wiki?TellDontAsk

Tell, Don't Ask Example[tda]

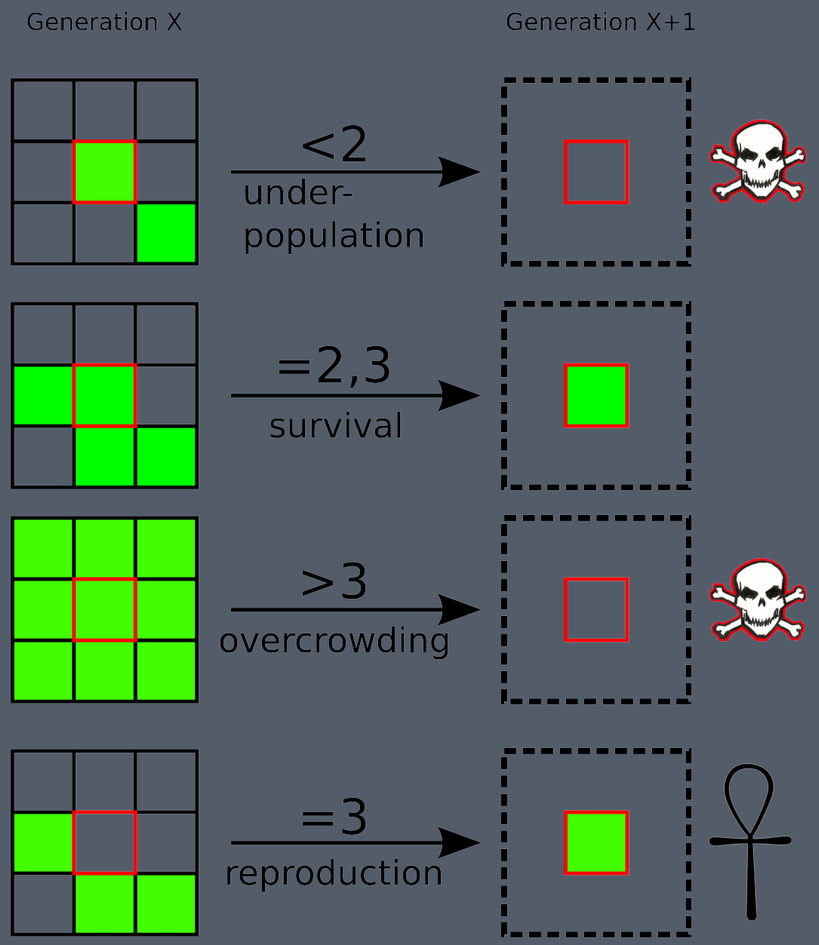
```
price = item.Price
if (price < 20) {
    item.SetAsBargain()
}
```

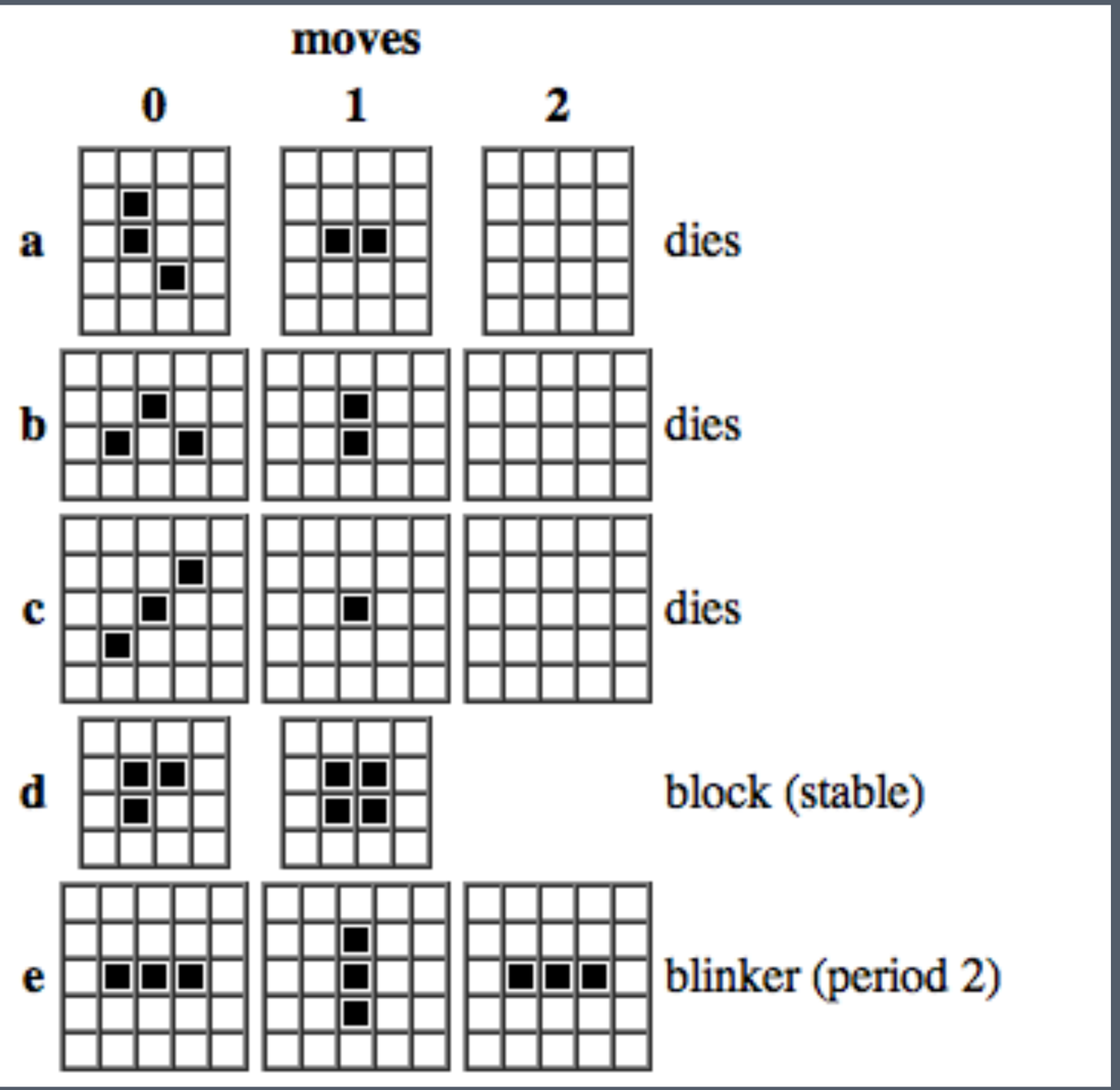
```
 price = item.Price
  this.LineColor? = price < 20 ? "Green" : "Red"
```

[tda] http://c2.com/cgi/wiki?TellDontAsk

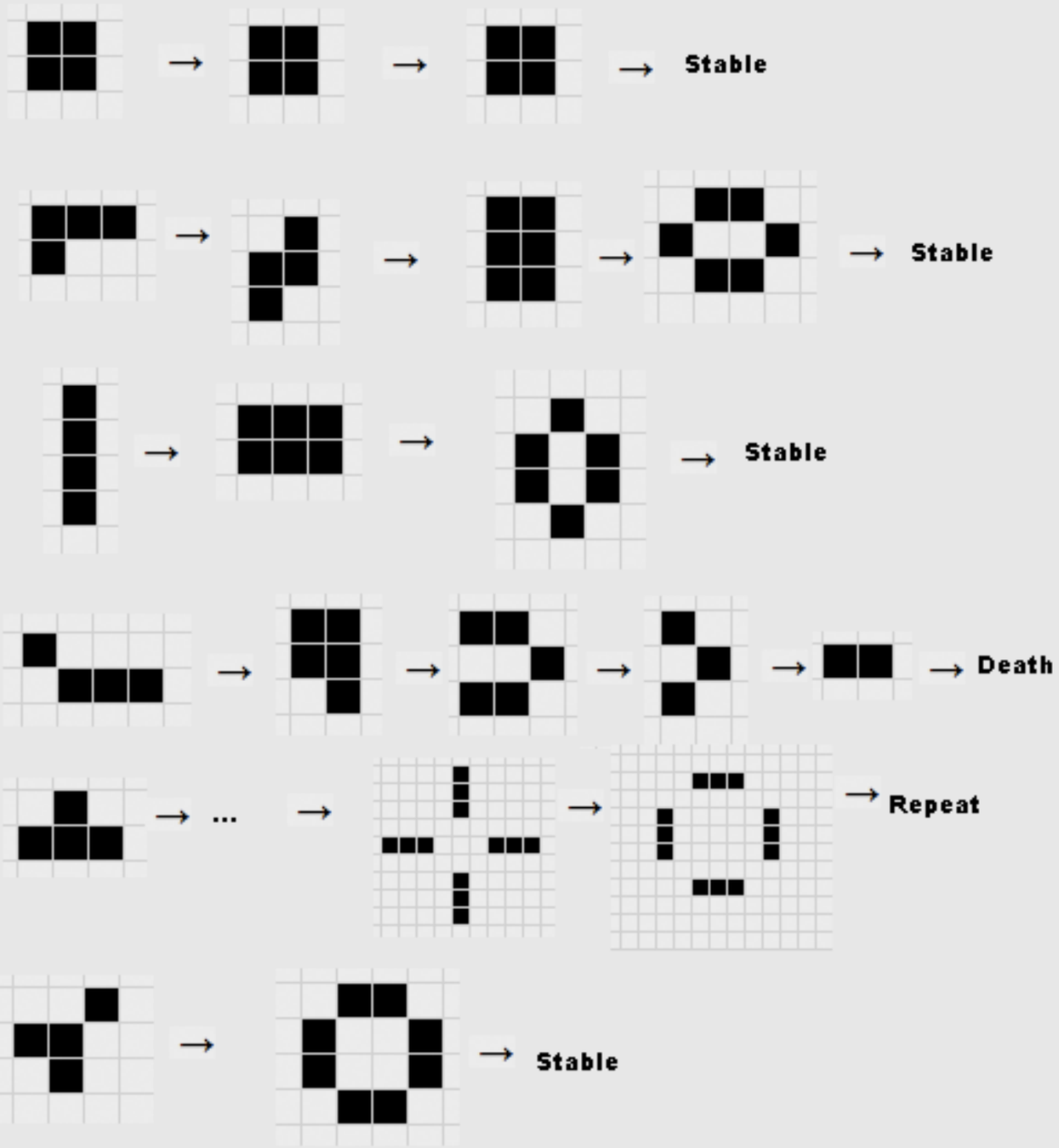
Conway's Game of Life

Game of Life Rules




moves
0
1
2
a
dies
b
dies
c
dies
d
block (stable)
e
blinker (period 2)

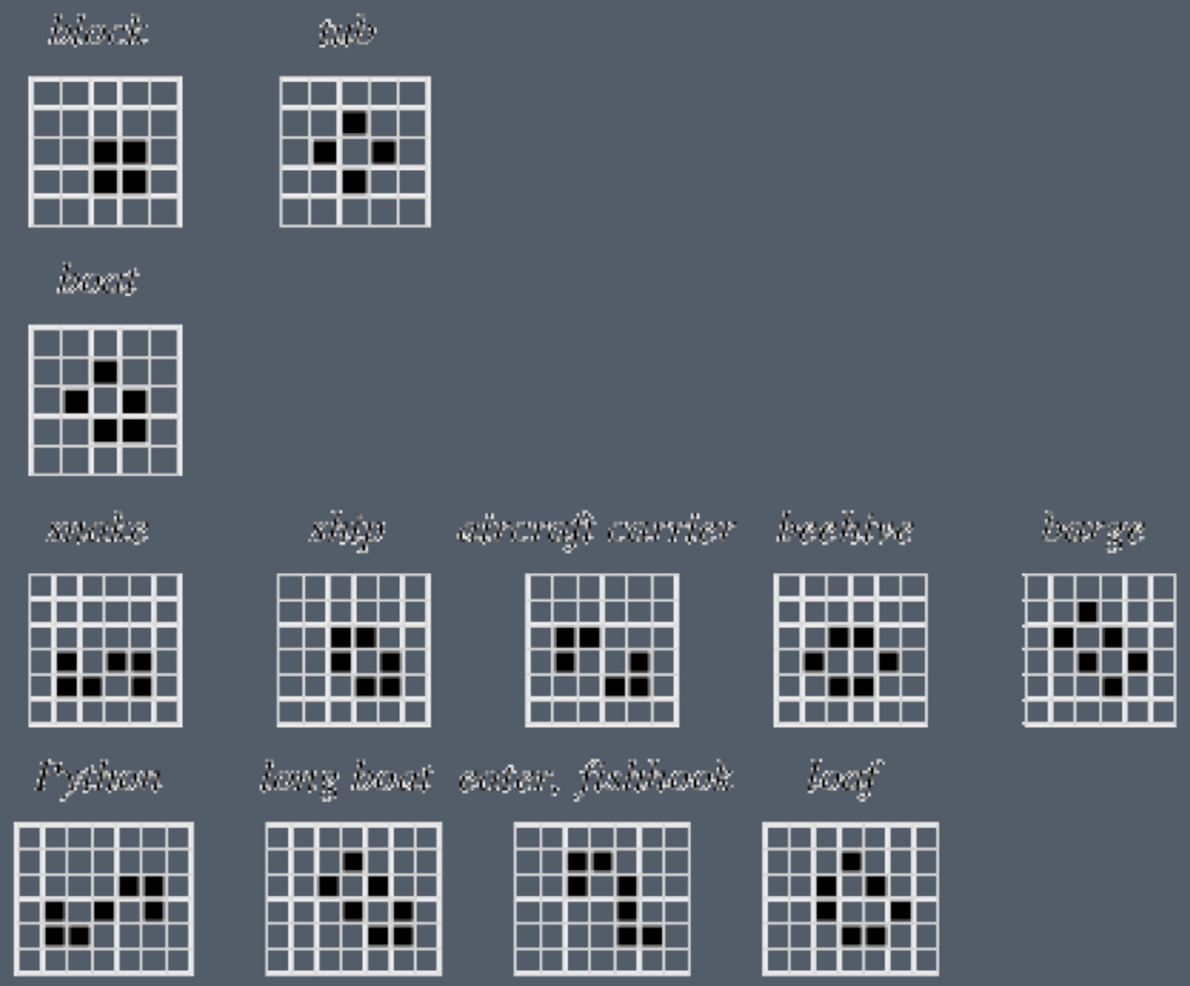
Patterns



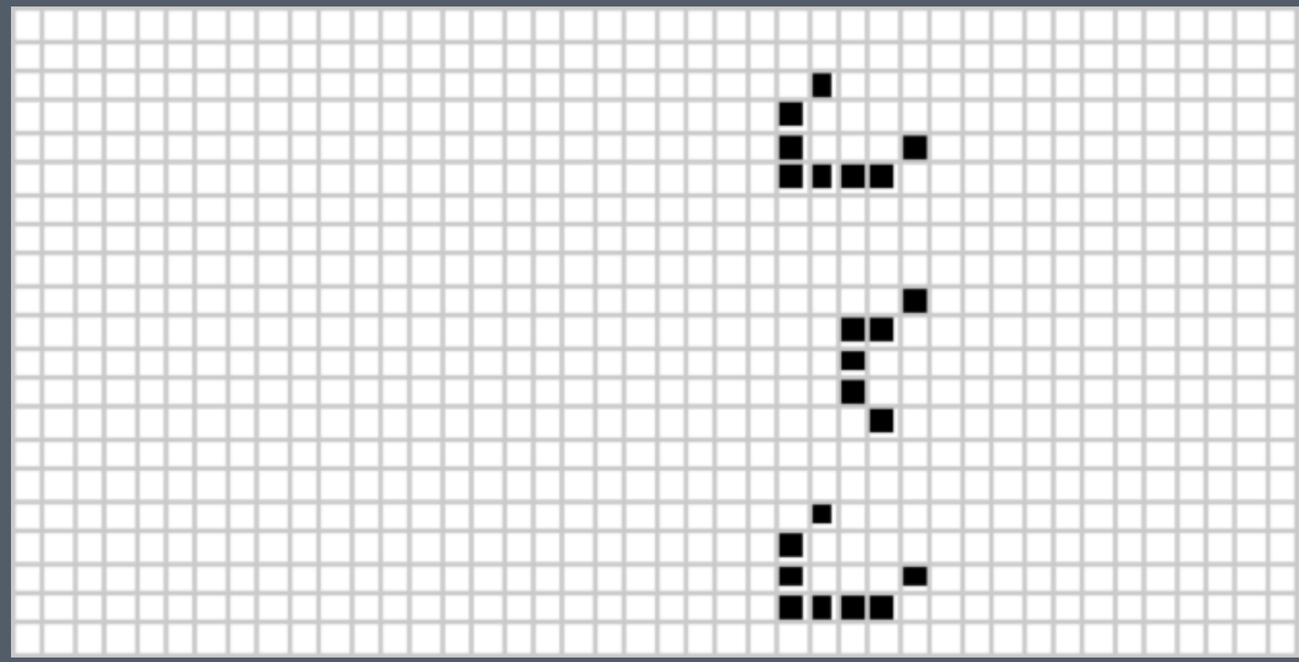
Tetromino Patterns

Still Lifes

Some patterns do not change
from one generation to the next



Oscillators



Resources

Starting Points

→ Github: coreyhaines/coderetreat

→ Github: Agilefreaks/coderetreat - C#, JavaScript, Ruby, Swift

→ Github: justinwyer/coderetreat - Java

→

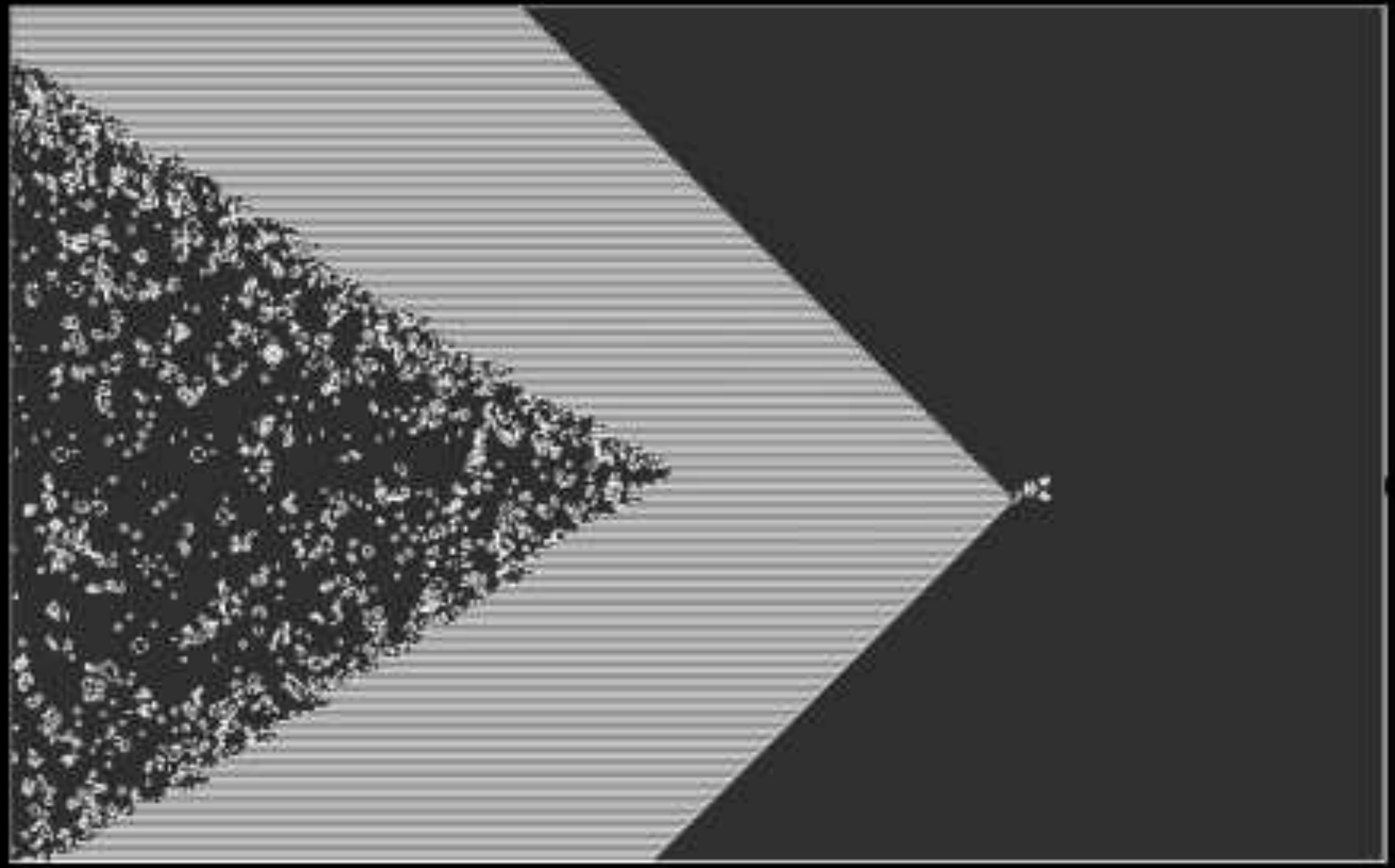
Web

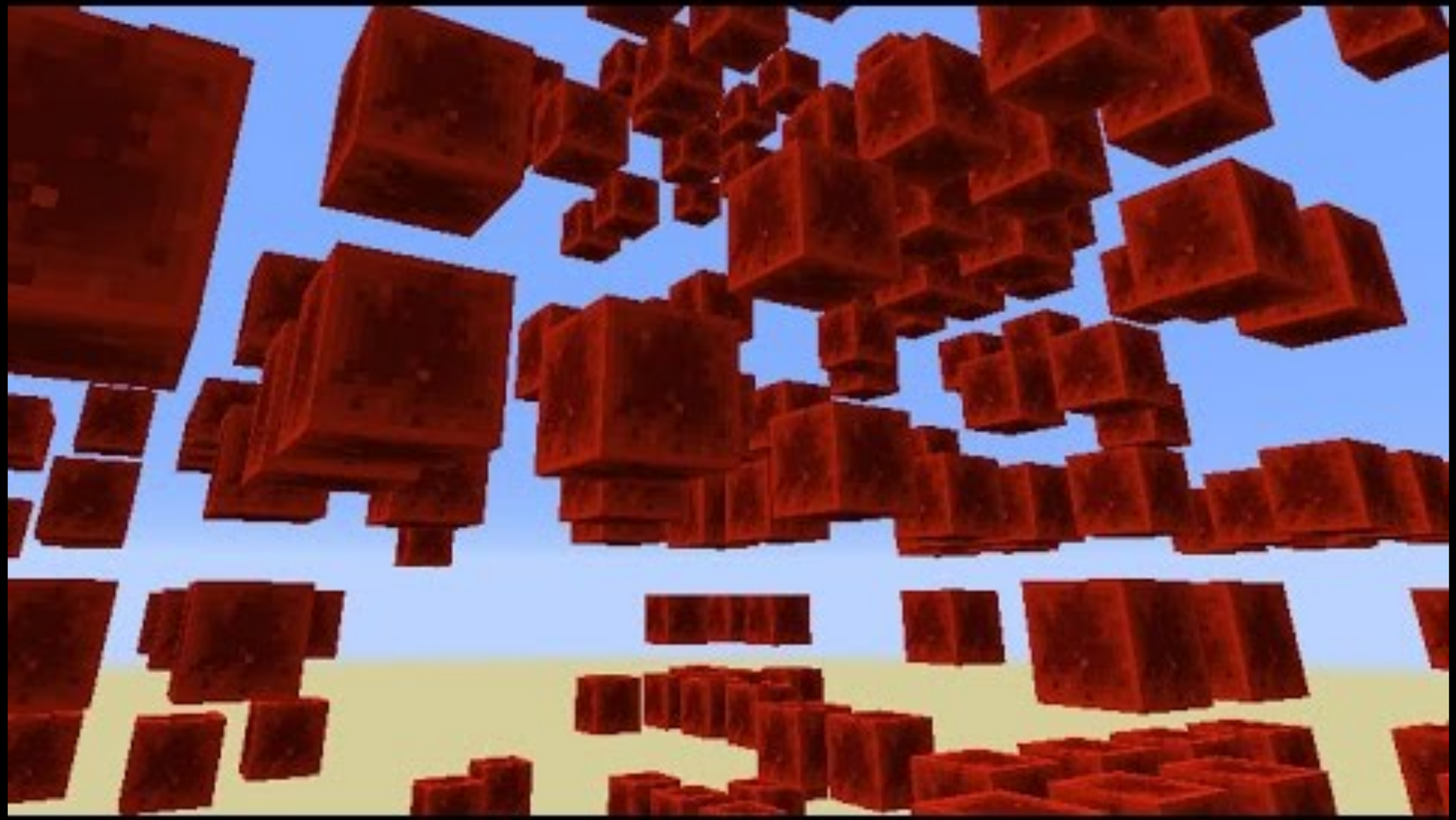
→ LifeWiki

Software

→ Golly

Videos






Conway's Game of Life