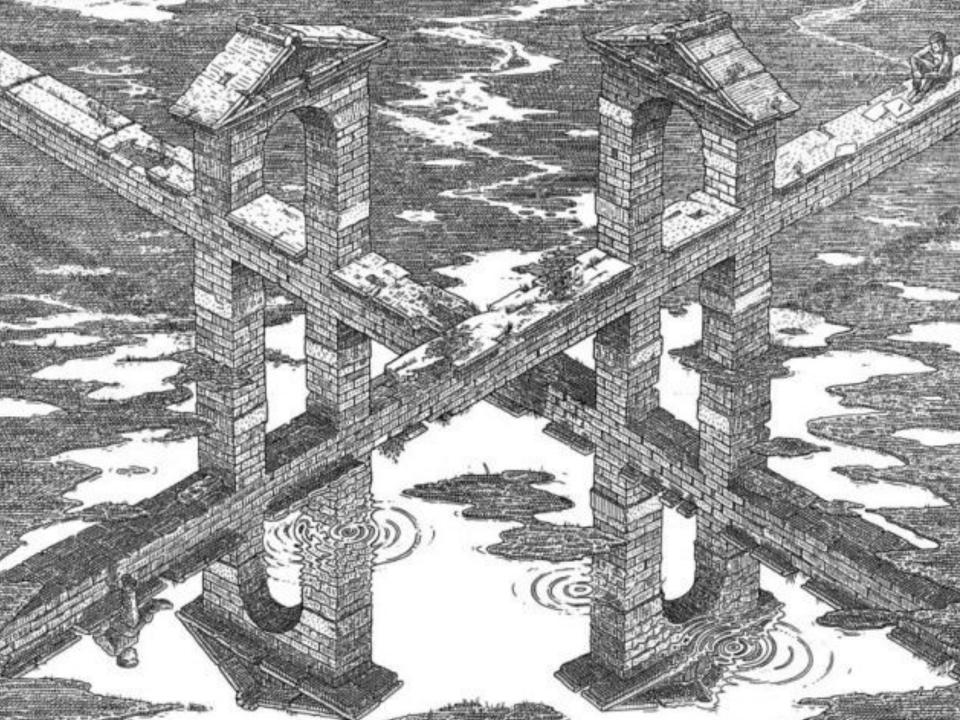
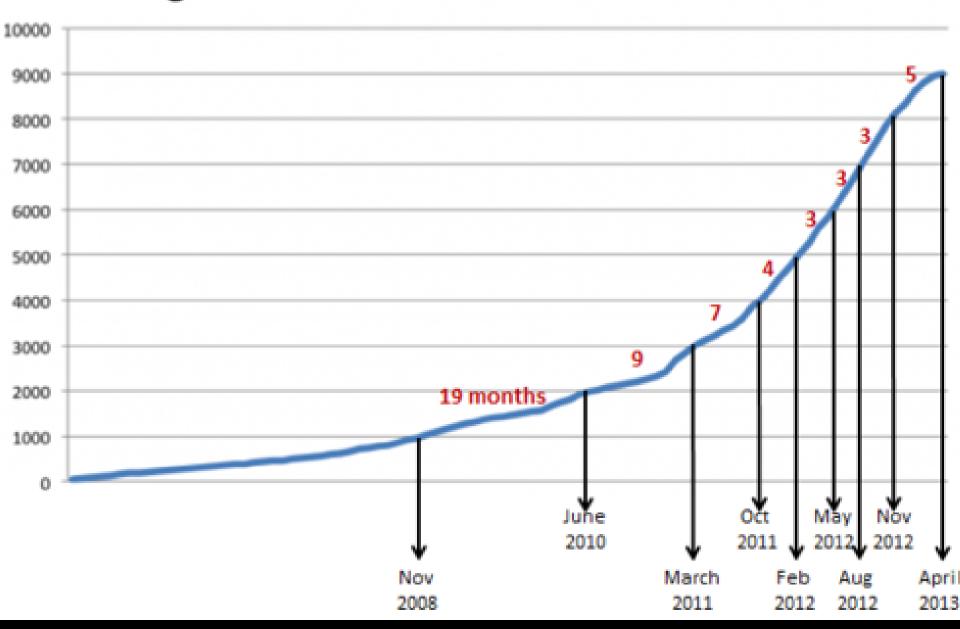
Self-Replication, Strandbeest, and the Game of Life.

What John von Neumann, Theo Jansen, and John Conway can tell us about scaling the API Economy.

Mike Amundsen
Director of Architecture,
API Academy – CA Technologies
@mamund



ProgrammableWeb API Growth 2005 - 2013



15B

CONNECTED DEVICES IN 2015



15B

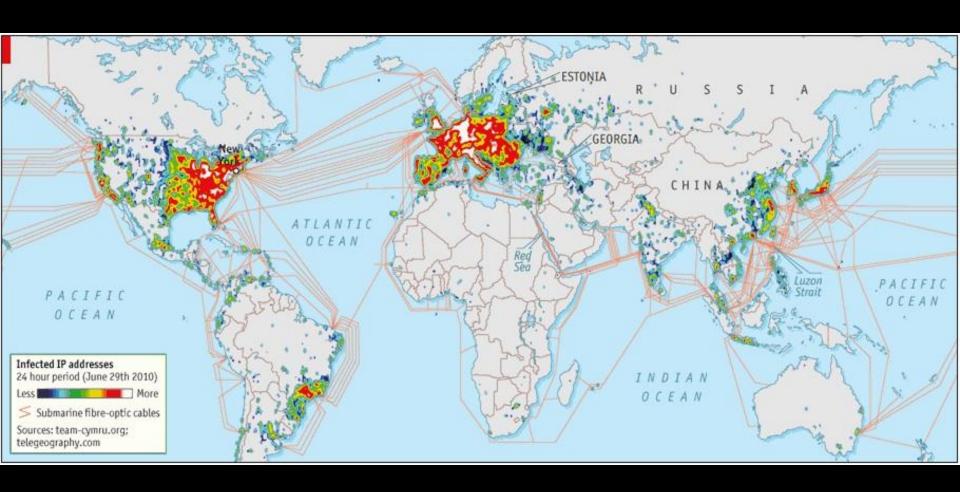
CONNECTED DEVICES IN 2015

40B

CONNECTED DEVICES BY 2020











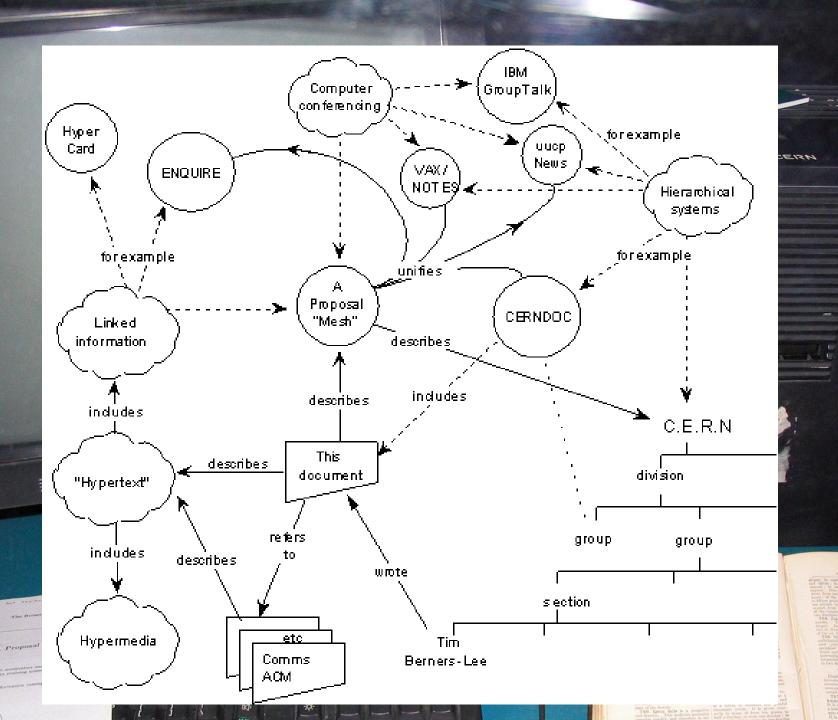






"I just had to take the hypertext idea and connect it to the Transmission Control Protocol and domain name system ideas and—ta-da!—the World Wide Web." - Tim Berners-Lee







ATLAS FINITE GROUPS

J. H. CONWAY R. T. CURTIS



SCIENTIFIC AMERICAN

PENDAMENTAL CONSTINUE

OTE DOLL ME

October 1970

SCIENTIFIC AMERICAN



October 1970

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October 1970

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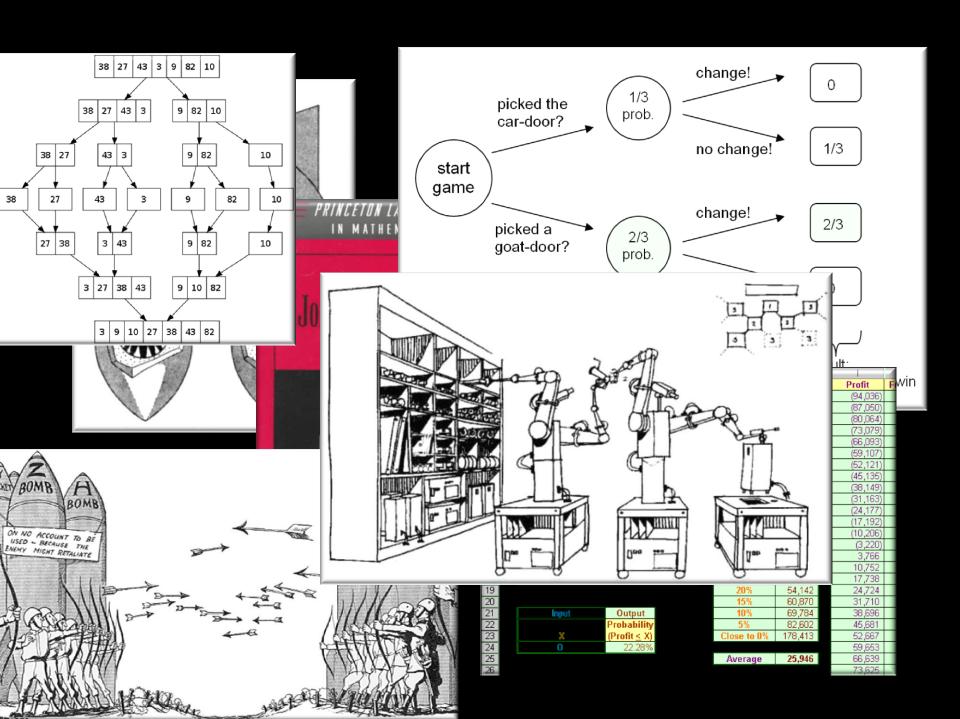
PENDAMENTH CONSTANTS

October 1970

















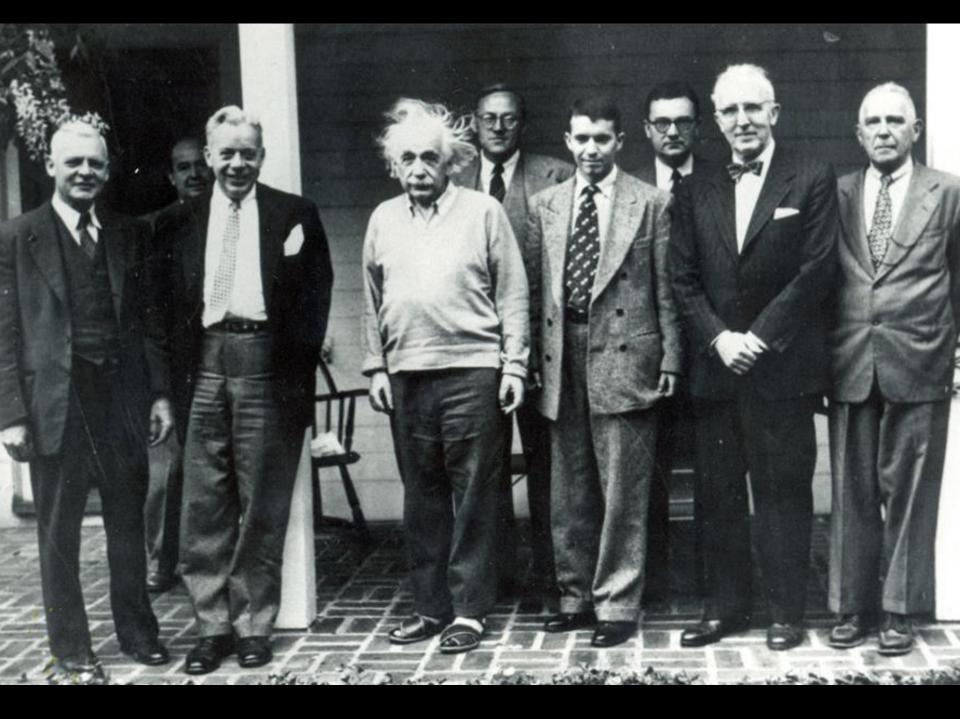














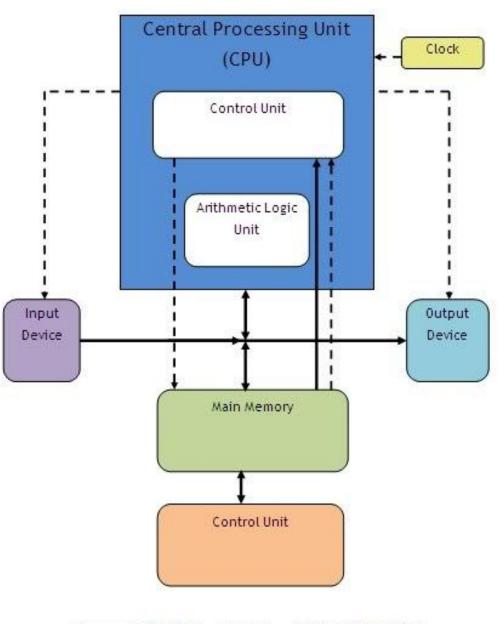




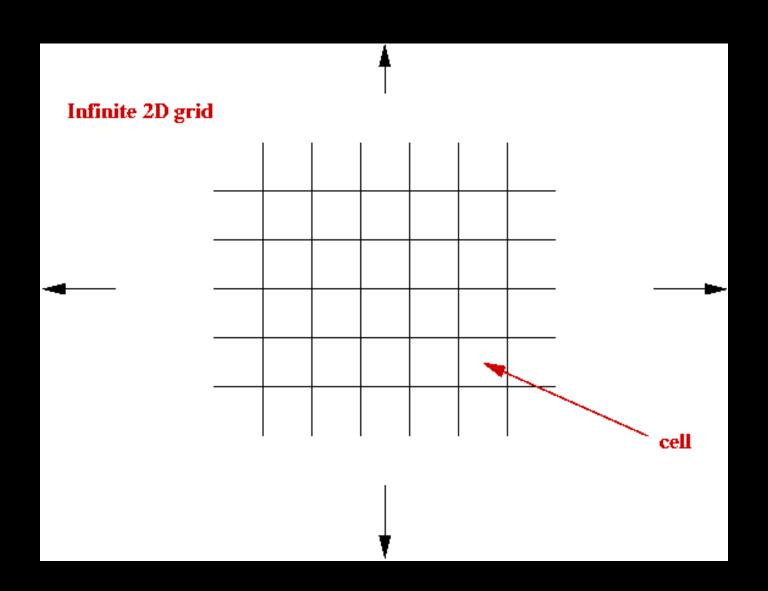




Components of the Von Neumann Model









THEORY OF SELFREPRODUCING AUTOMATA

BY JOHN VON NEUMANN

EDITED AND COMPLETED BY ARTHUR W. BURKS

Bubble Growth Rules

See the Bubble.PopulateGrowthConditionCases() method

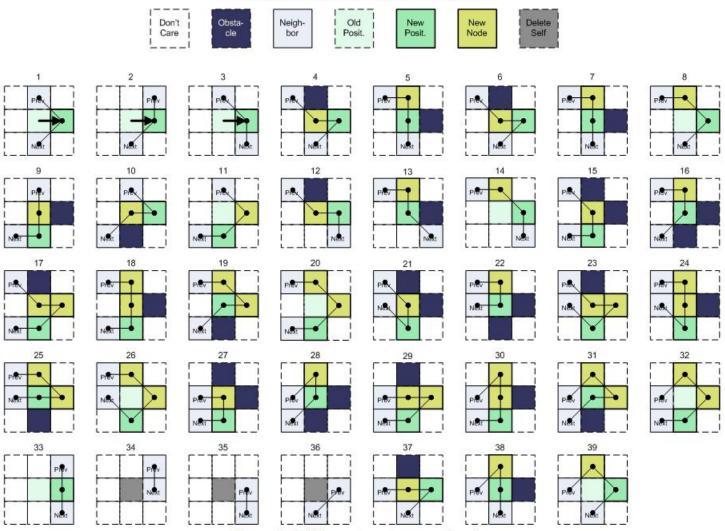


Figure 5: Cellular automaton growth rules

0	1	1	0	1	1	0	1	1
1	0	0	1	0	0	1	0	0
0	0	1	0	0	1		0	1
0	1	1	0	1	1		1	1
1	0	0	1	0	0	1	0	0
0	0	1	0	0	1	0	0	1
0	1	1	0	1	1	0	1	1
1	0	0	1	0	0	1	0	0
0	0	1	0	0	1	0	0	1



STEPHEN WOLFRAM A NEW KIND OF SCIENCE

Bubble Growth Rules

See the Bubble.PopulateGrowthConditionCases() method

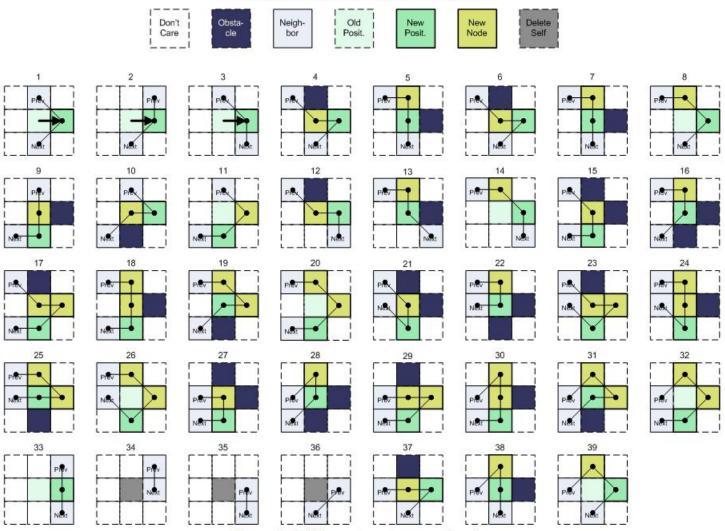
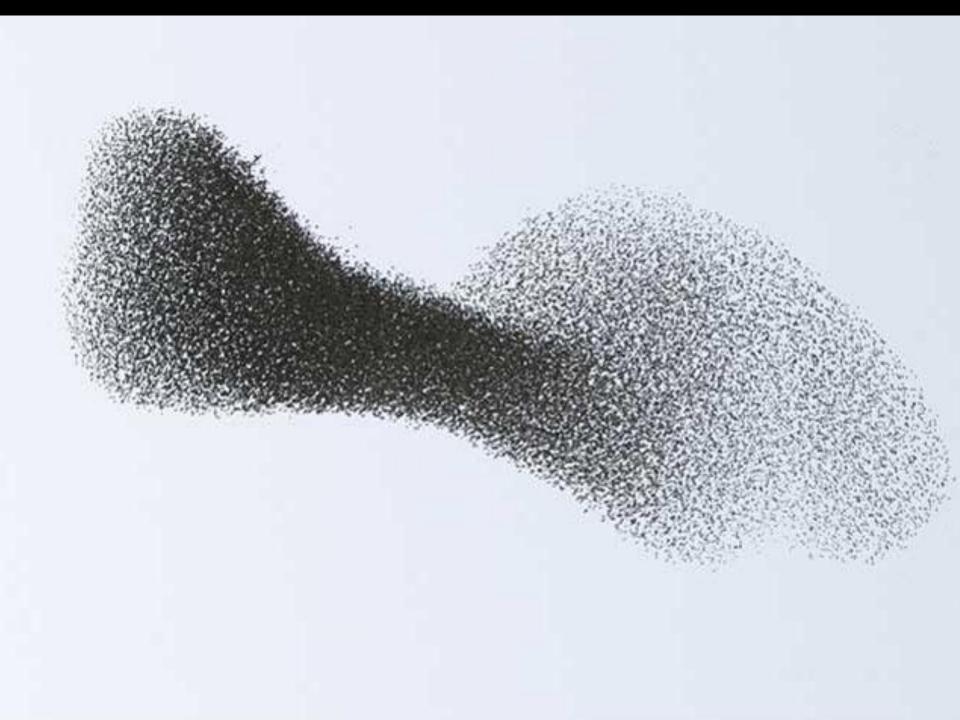


Figure 5: Cellular automaton growth rules























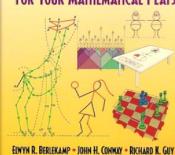
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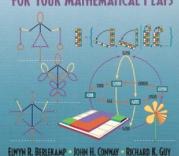
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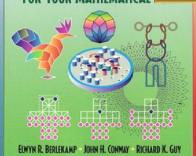
WINNING WAYS
FOR YOUR MATHEMATICAL PLAYS



WINNING WAYS



WINNING WA



D. E. KNUTH



ELWYN R. BERLEKAMP - JOHN H. CONWAY - RICHARD K. GUY

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October 1970

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October 1970

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PENDAMENTH CONSTANTS

October 1970

"This month we consider Conway's latest brainchild, a fantastic solitaire pastime he calls 'life'" - Martin Gardner, 1970

							1 1														-	$\overline{}$
0	1	1	1	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0
0	1	1	2	1	0	0		1	1	2	2	1	0	0		0	0	1	1	1	0	0
1	3	5	3	2	0	0		1	1	4	2	2	0	0		1	1	3	1	2	0	0
1	1	3	2	2	0	0		1	3	4	3	2	0	0		1	1	5	3	3	0	0
1	2	3	2	1	0	0		0	2	2	3	1	0	0		1	2	3	2	2	0	0
0	0	0	0	0	0	0		0	1	1	1	0	0	0		0	1	2	2	1	0	0
0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0	0	0
Glider (1)							Glider (2)						Glider(3)									
_														_								_

0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	1	1	1	0	0
0	1	1	3	2	1	0	0	0	1	1	2	1	0
0	2	4	4	2	1	0	0	1	3	5	3	2	0
0	1	2	2	3	1	0	0	1	1	3	2	2	0
0	1	2	2	1	0	0	0	1	2	3	2	1	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0
Glider(4)						Glider (5, or 1 translated)						d)	

1. Survivals:

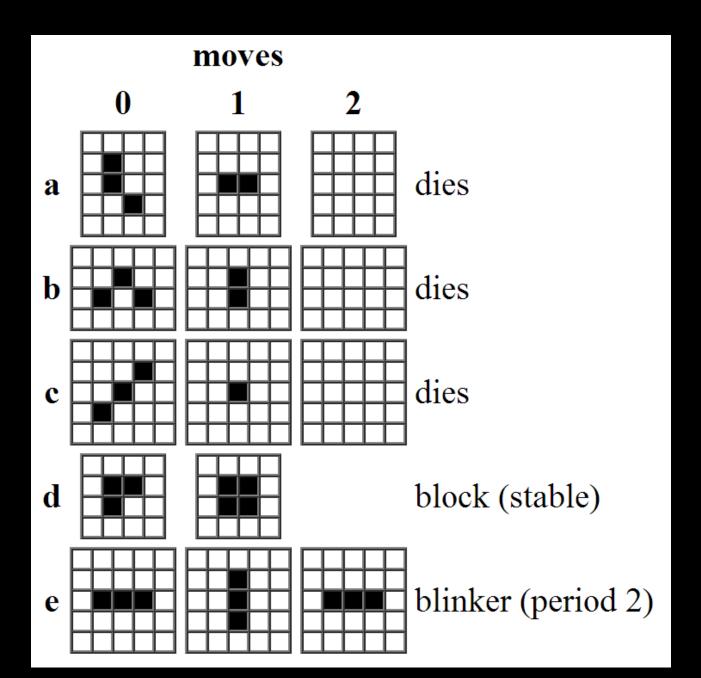
Every counter with two or three neighboring counters survives for the next generation.

2. Deaths:

Each counter with four or more neighbors dies (is removed) from overpopulation. Every counter with one neighbor or none dies from isolation.

3. Births:

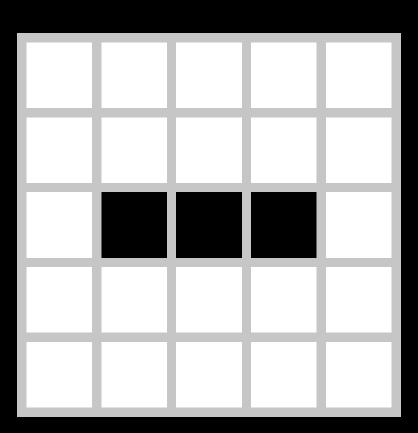
Each empty cell adjacent to exactly three neighbors--no more, no fewer--is a birth cell. A counter is placed on it at the next move.

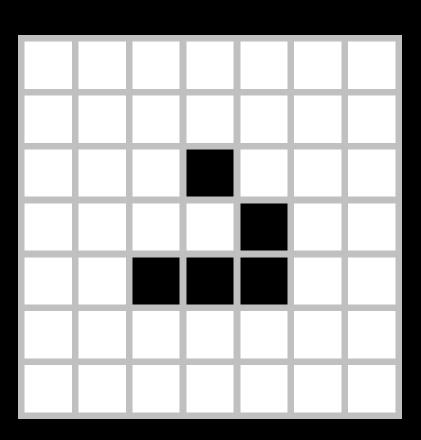


"For long-lived populations Conway sometimes uses a PDP-7 computer with a screen on which he can observe the changes."

- Martin Gardner, 1970











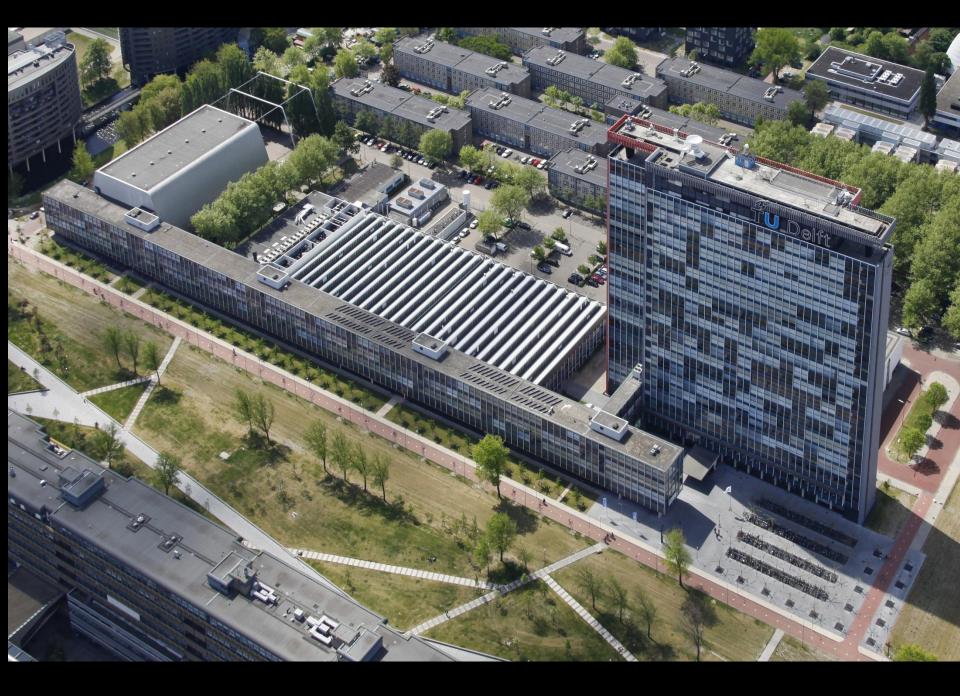






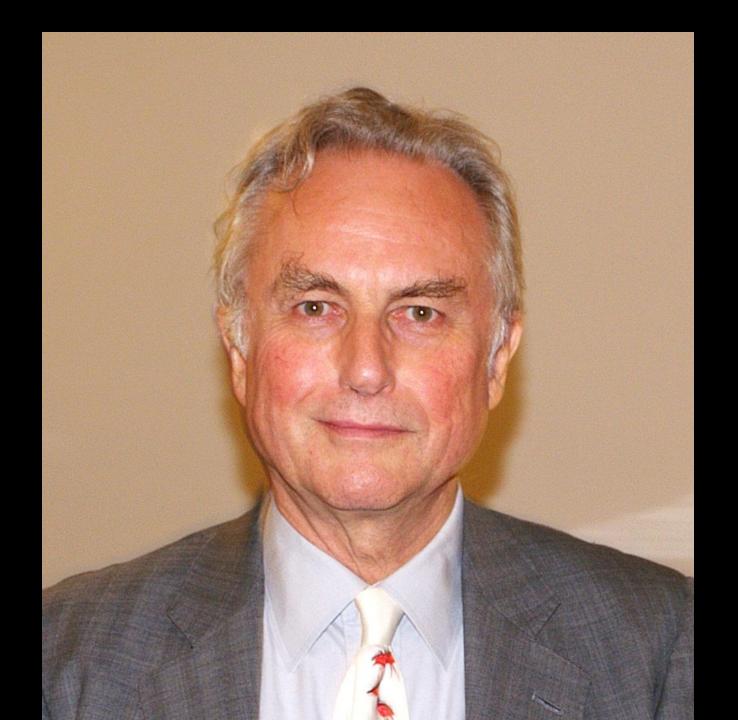














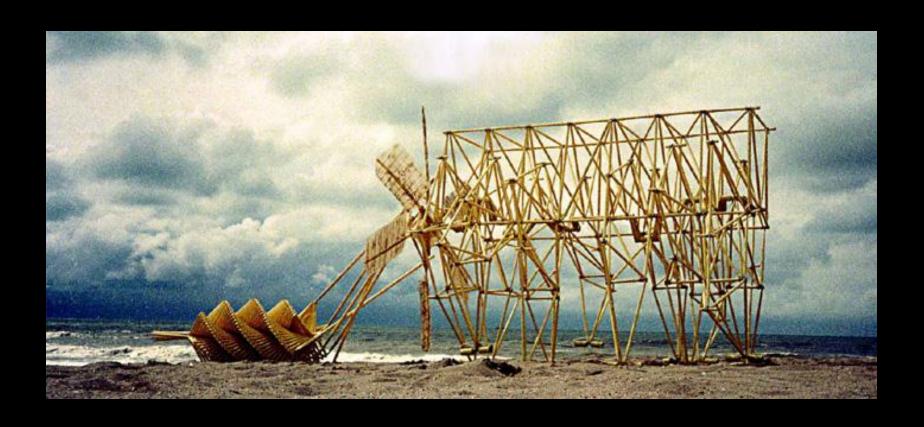
Richard Dawkins The Blind Watchmaker

"I started with the idea that I could make windpowered 'animals' that would live on the beach and build up the dunes to save us from rising sea levels in the coming century." - Theo Jansen



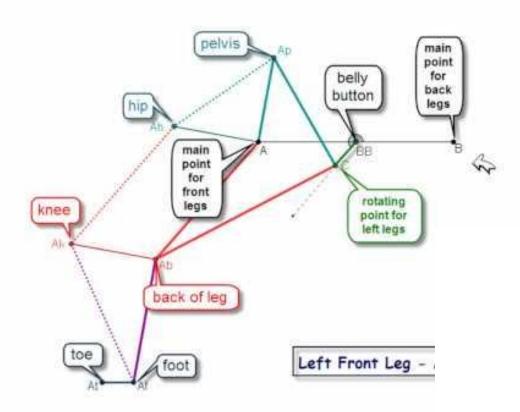








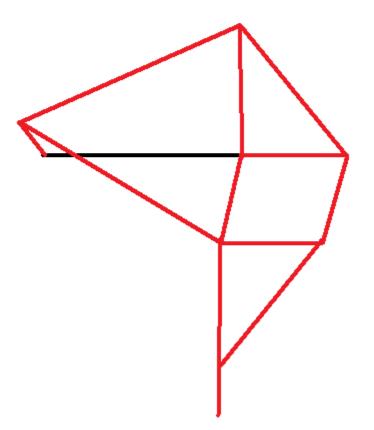


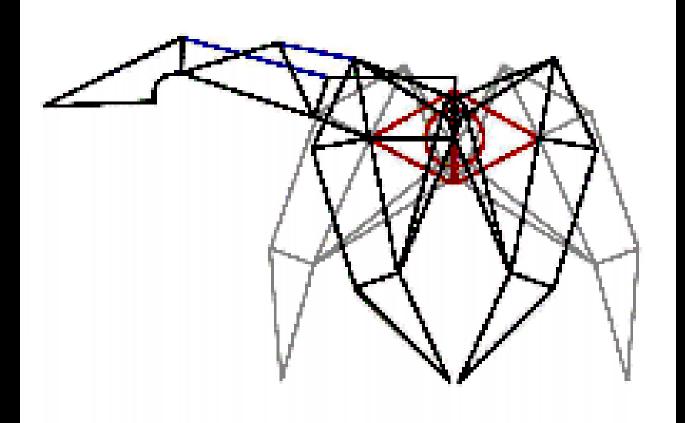






"The inherited trashing movements were copied and, mixed with mutations, distributed to a random subsequent generation of more than 200 creatures." - Theo Jansen.





No creature on earth is better at pretending than we humans. The title of this book is a way of saying that our daily life is nothing other than a show played out in our minds. We have a talent for creating a fantasy world. Luckily for us. He who is unable to daydream becomes hopelessly depressed. Our talent for simulating is so strong that we are even able to pretend that we exist. We simulate a first-person form, an "i".

In The Great Pretender, kinetic artist Theo Jansen shows that the "" we envision is a tool in our evolution. We need this tool to be selfish. There can be no selfishness without the I-fantasy.

Since 1990 Theo Jansen has been engaged in creating new forms of life; beach animals. These are not made of protein like the existing life-forms but from another basic stuff, yellow plastic tubing. Skeletons made from these tubes are able to walk. They get their energy from the wind, so they don't have to eat like regular animals. They evolved over many generations, becoming increasingly adept at surviving storms and water from the sea. They sufficiently in the release herds of these animals on the shore. In redoing the Creation, so to speak, he hopes to become wiser in his dealings with the existing nature by encountering problems the Reaf Creator had to face.

The Great Prefender is a testimonial to his experiences as God. It's not easy being God; there are plenty of disappointments along the way. But on the few occasions that things work out, being God is the most wooderful thing in the world.

Includes a companion DVD of beach animal videos.



Theo Jansen

The Great Pretender

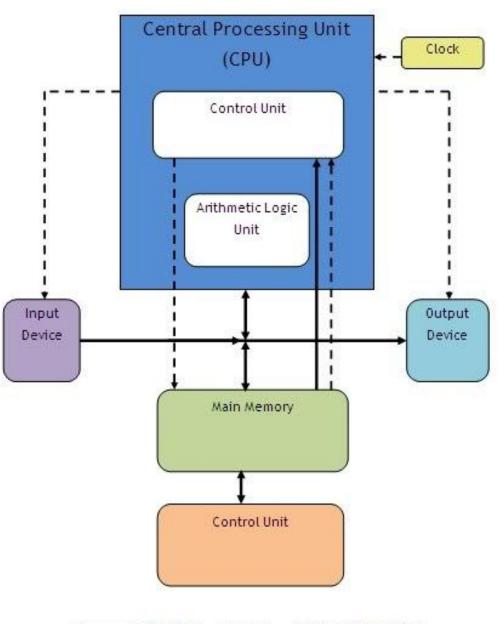
010 Publishers





And so...

Components of the Von Neumann Model



Bubble Growth Rules

See the Bubble.PopulateGrowthConditionCases() method

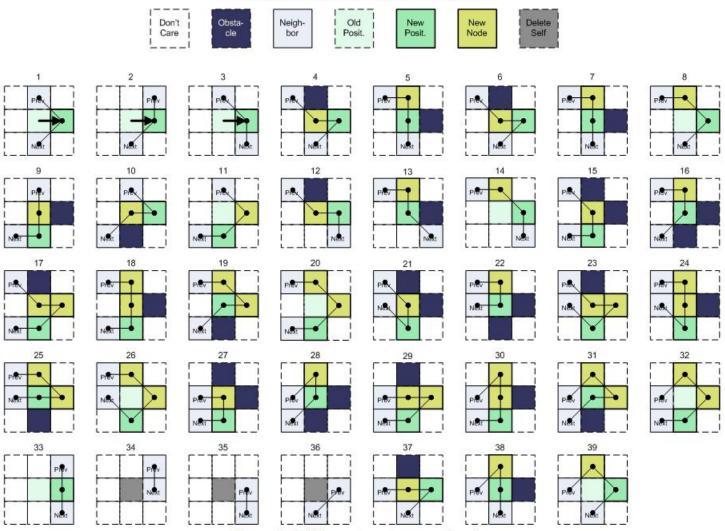
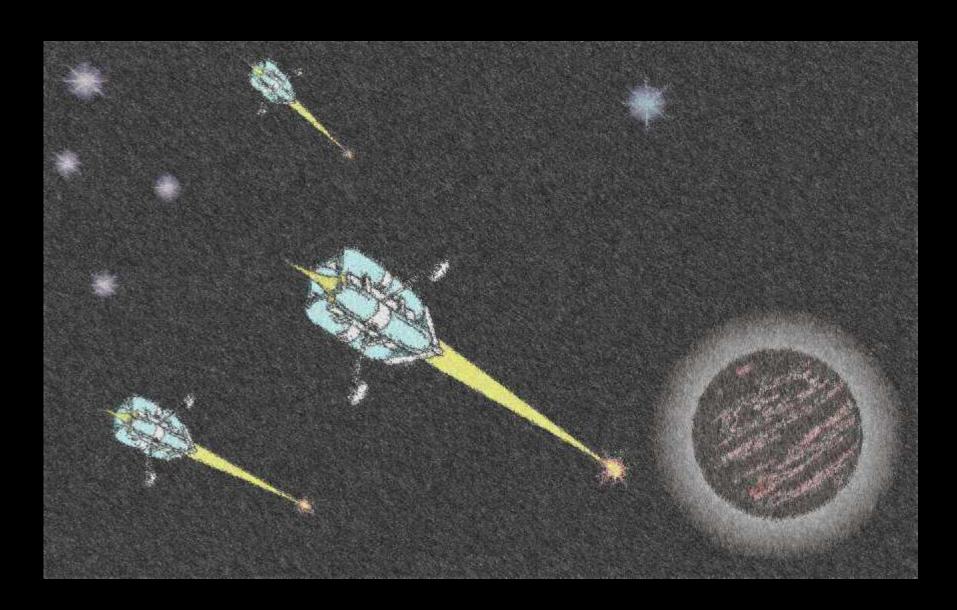
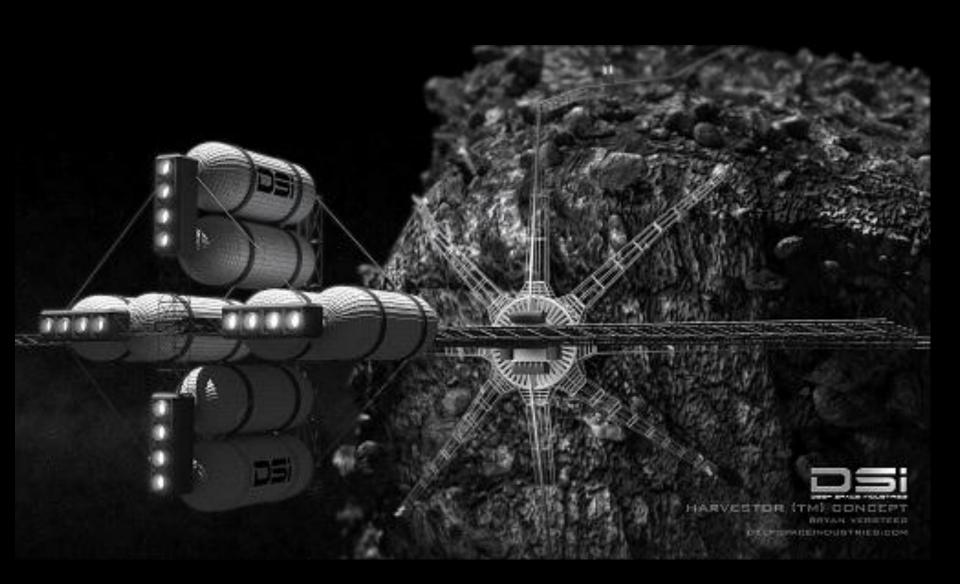


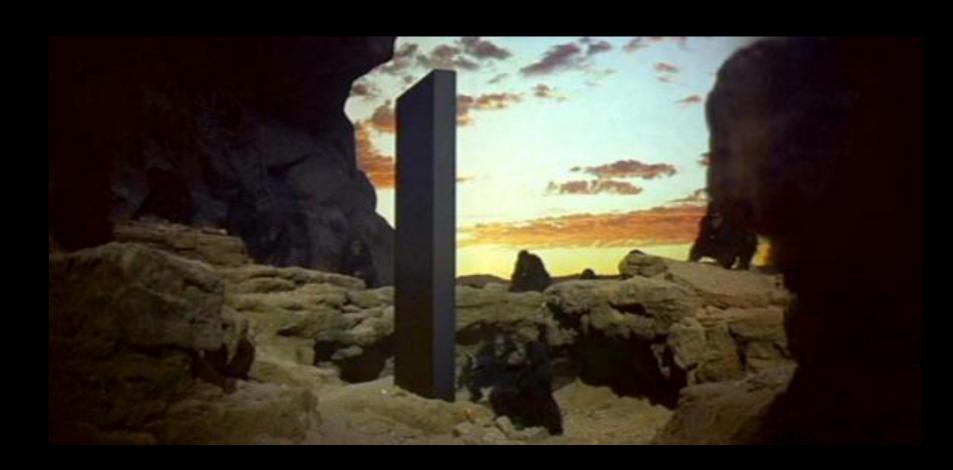
Figure 5: Cellular automaton growth rules













15B

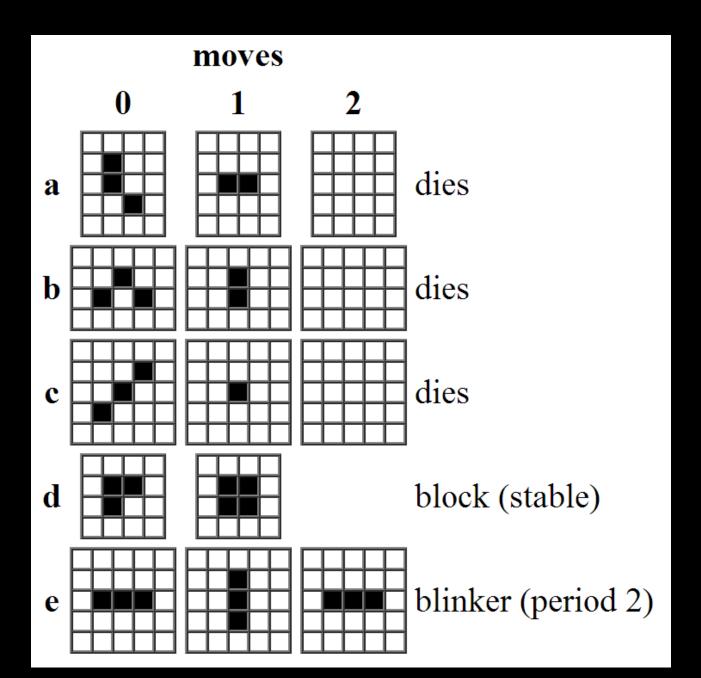
CONNECTED DEVICES IN 2015

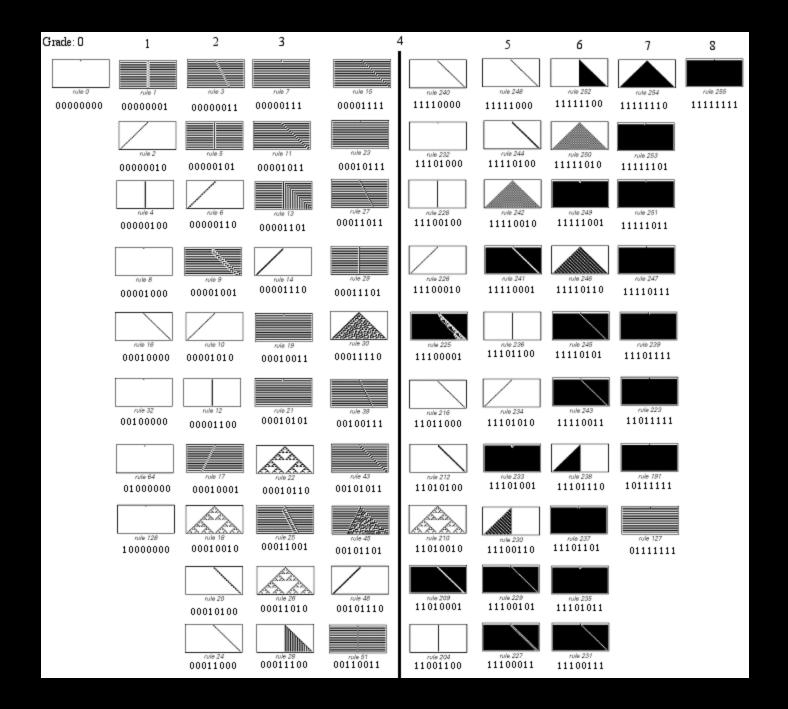
40B

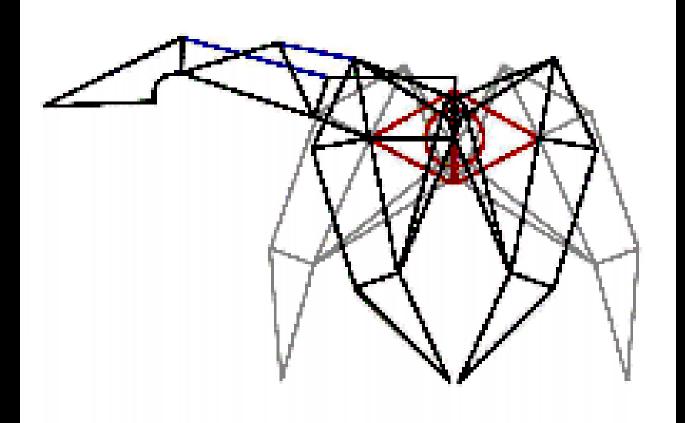
CONNECTED DEVICES BY 2020

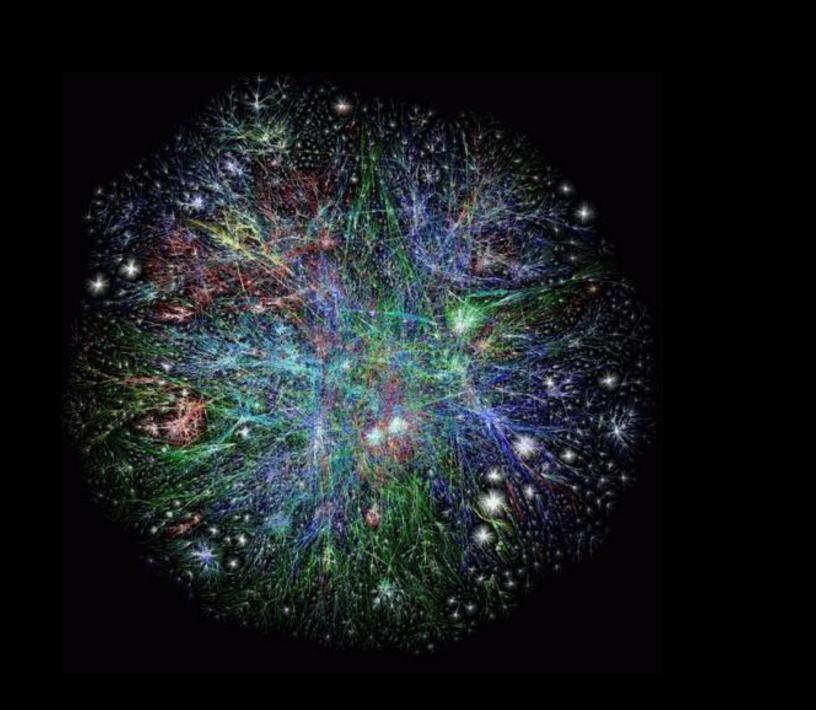




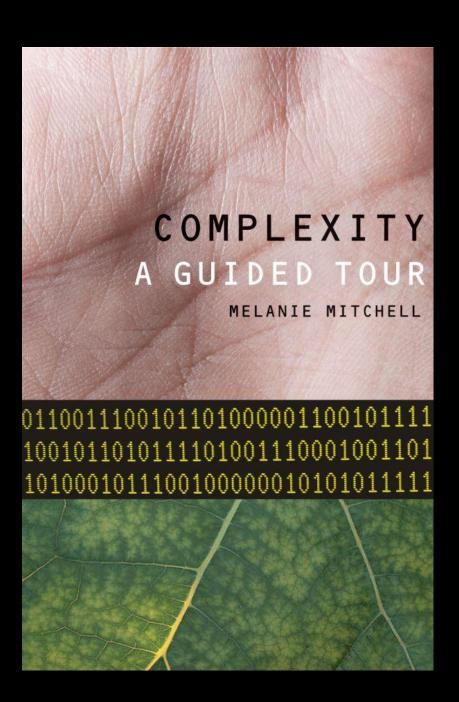


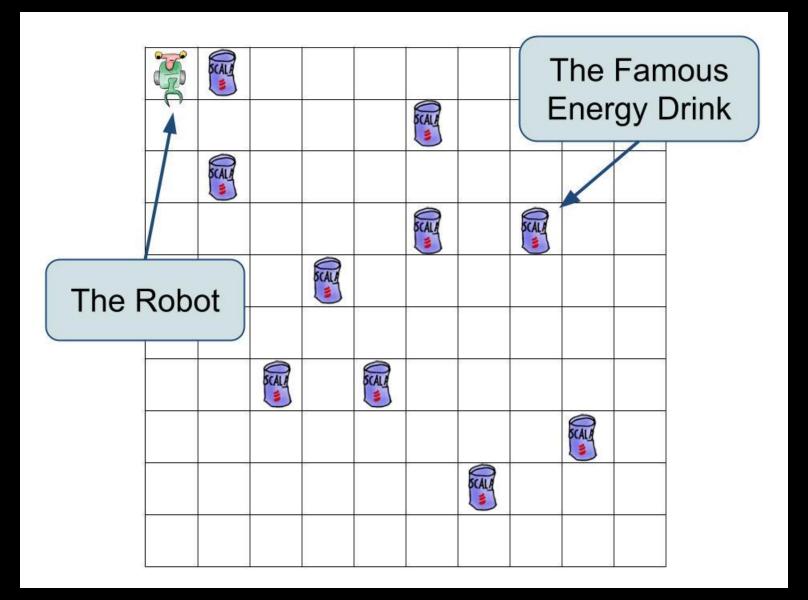


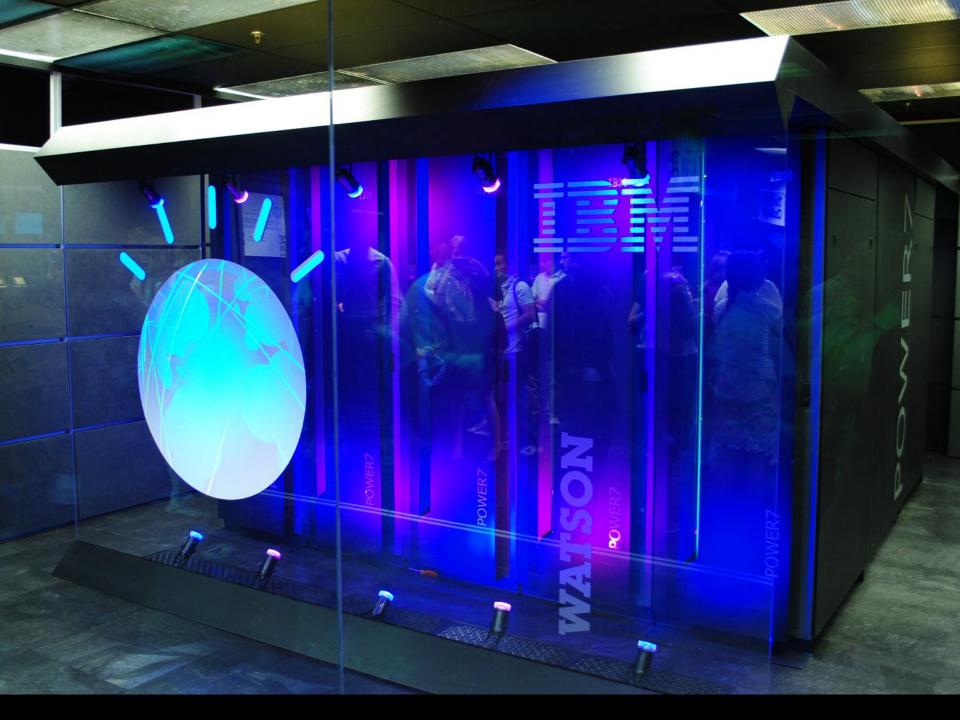












"As we gain more data, how much better does our system get? It's still improving—but we are getting to the point where we get less benefit than we did in the past." - Peter Norvig.



Yahoo! Metros Atlanta - Austin - Boston - Chicago - Dallas / Fort Worth - Los Angeles
Get Local Minneapolis / St. Paul - New York - S.F. Bay - Seattle - Washington D.C.

How to Include Your Site - Company Information - Contributors - Yahoo! to Go



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Google Search

I'm feeling lucky

Why use Google!

Press about Google!

Help!

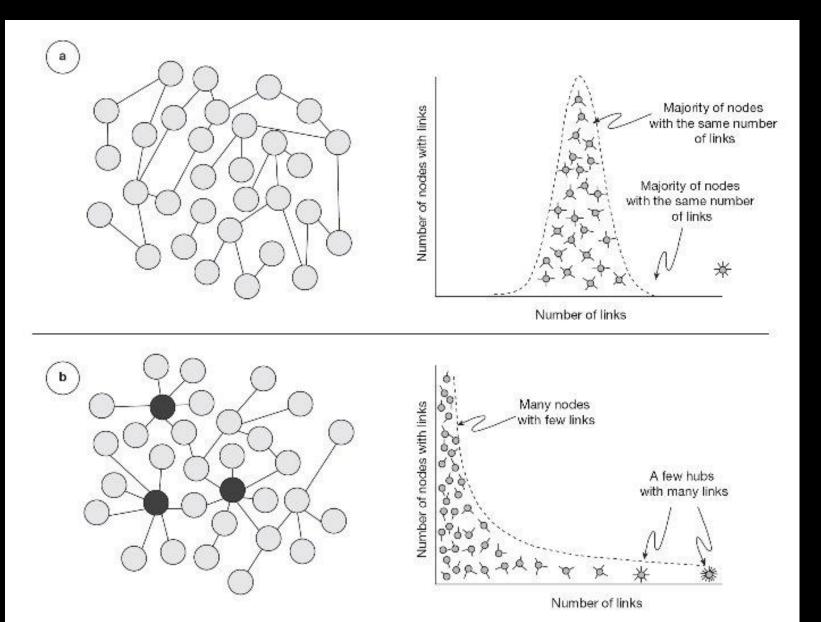
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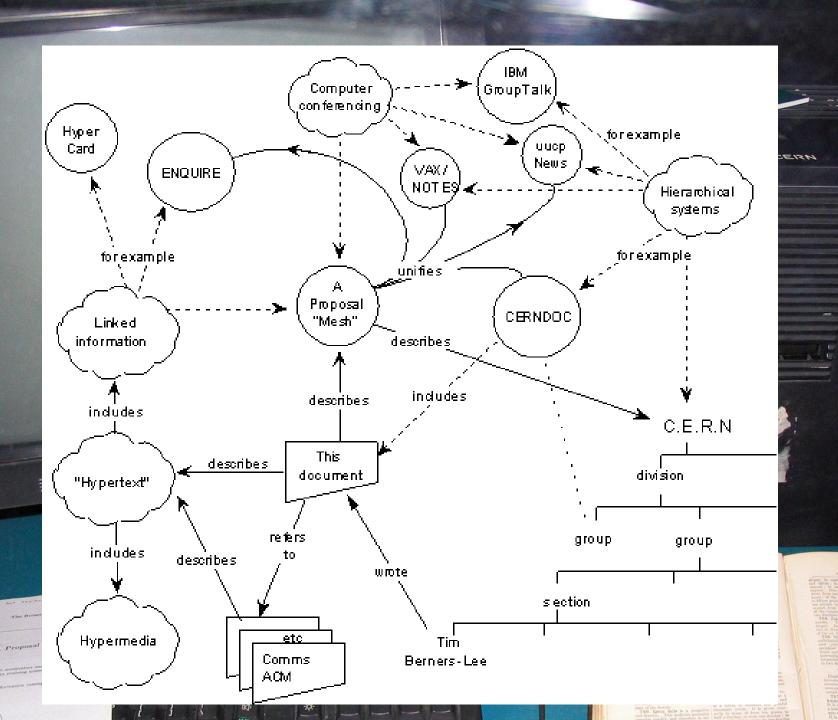
Jobs at Google

Google! Logos

Making Google! the Default

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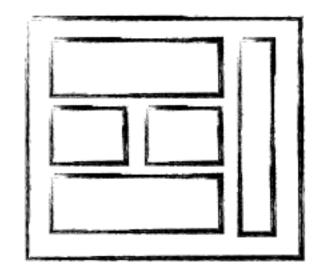


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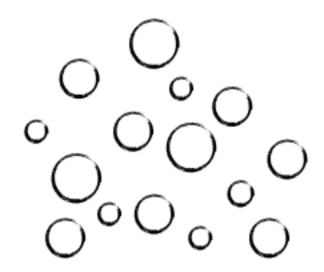
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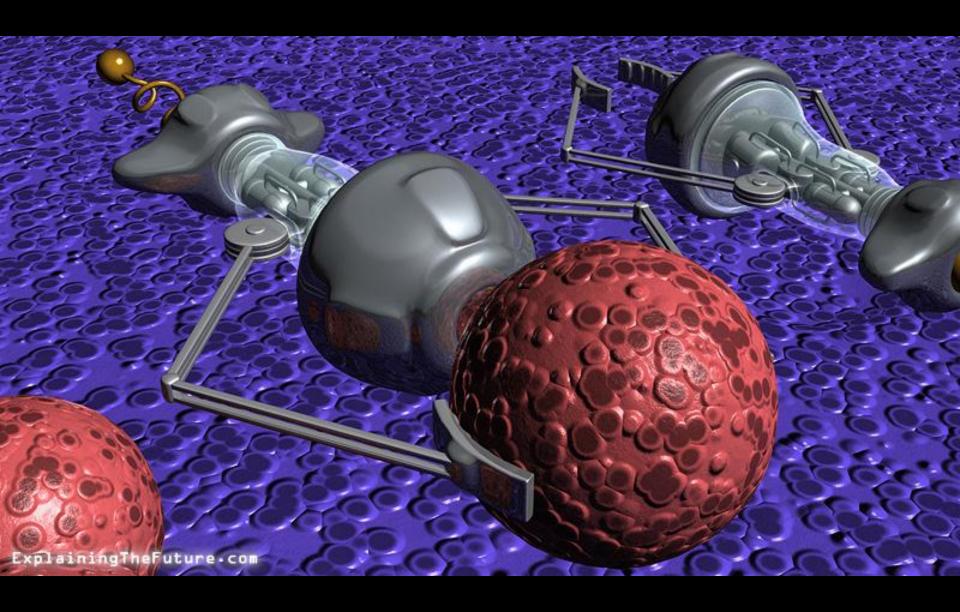






MICRO SERVICES

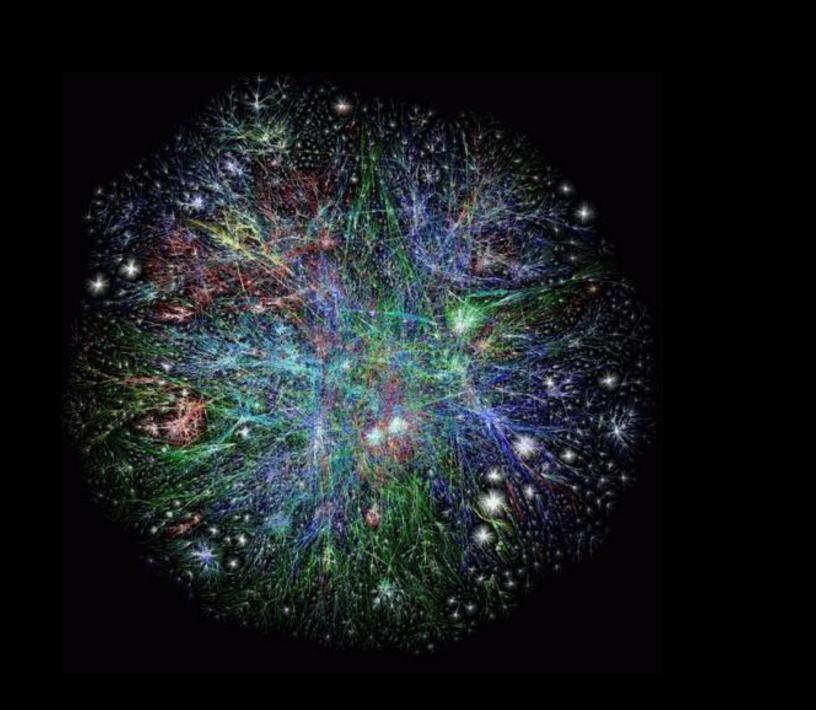




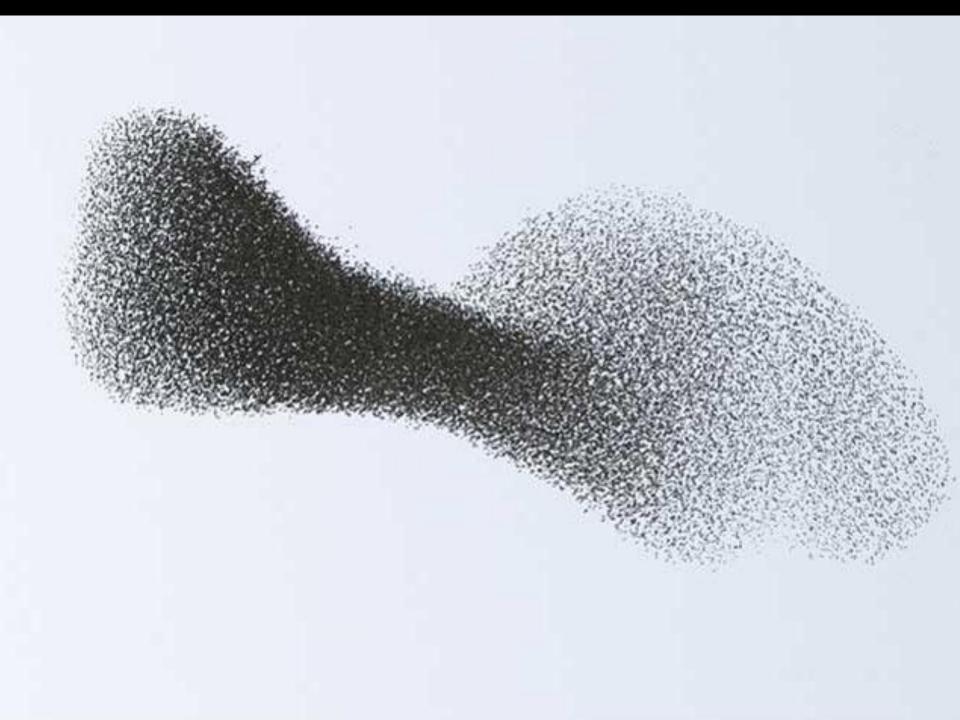
NO CODE



"The maze is a metaphor for hypermedia applications in general." — Leonard Richardson.



```
19 m.rules = {
20          'east': ['south', 'east', 'north', 'west'],
21          'south': ['west', 'south', 'east', 'north'],
22          'west': ['north', 'west', 'south', 'east'],
23          'north': ['east', 'north', 'west', 'south']
24 };
```





```
"><title>huge pile of javascript - Google Search</title>
{kEI:"NJMxU-vKIMT70gWS0oGIBw",getEI:function(a){for(var b;
oute("eid")));)a=a.parentNode;<mark>return</mark> b||google.kEI},https:fi
:"==window.location.protocol},kEXPI:"4006,31215,3300097,3300
,3300097,3300102,3300132,3300137,3300164,3310366,3310628,33
Bw"},authuser:0,ml:function(){},kHL:"en",time:function(){r
ion(a,b,c,h,k){var d=
oogle.lc,e=google.li,g="";d.onerror=d.onload=d.onabort=<mark>func</mark>
earch("&ei=")|[(g="&ei="+google.getEI(h));c=c||"/"+(k||"gen_
&zx="+google.time();a=/^http:/i;a.test(c)&&google.https()?(
te f[e]):(d.src=c,google.li=e+1)},lc:[],li:0,j:{en:1,b:!!loc
match("[#\&]((q|fp)=|tbs=simg|tbs=sbi)"),
::"1e4344be"},y:{},x:function(a,b){google.y[a.id]=[a,b];ret
a+l++}, function() {google.load(a,b,c)})}}; var l=0;
|(window.chrome=\{\});window.chrome.sv=2.00;window.chrome.sea
..searchBox={});var m=function(){var a=encodeURIComponent
.searchBox.value);google.x({id:"psyapi"},<mark>function</mark>(a){<mark>retur</mark>
arch({q:a,sourceid:"chrome-psyapi2"},!1,!0)}}
:hrome.searchBox.onsubmit=m;})();
inction(a){a.href=document.getElementById(a.id.substring(1))
var h=this, l=Date.now||function(){return+new Date}; var u=
t(navigator userAgent) w="undefined"[=typeof navigator&&]/
```

```
19 m.rules = {
20          'east': ['south', 'east', 'north', 'west'],
21          'south': ['west', 'south', 'east', 'north'],
22          'west': ['north', 'west', 'south', 'east'],
23          'north': ['east', 'north', 'west', 'south']
24 };
```

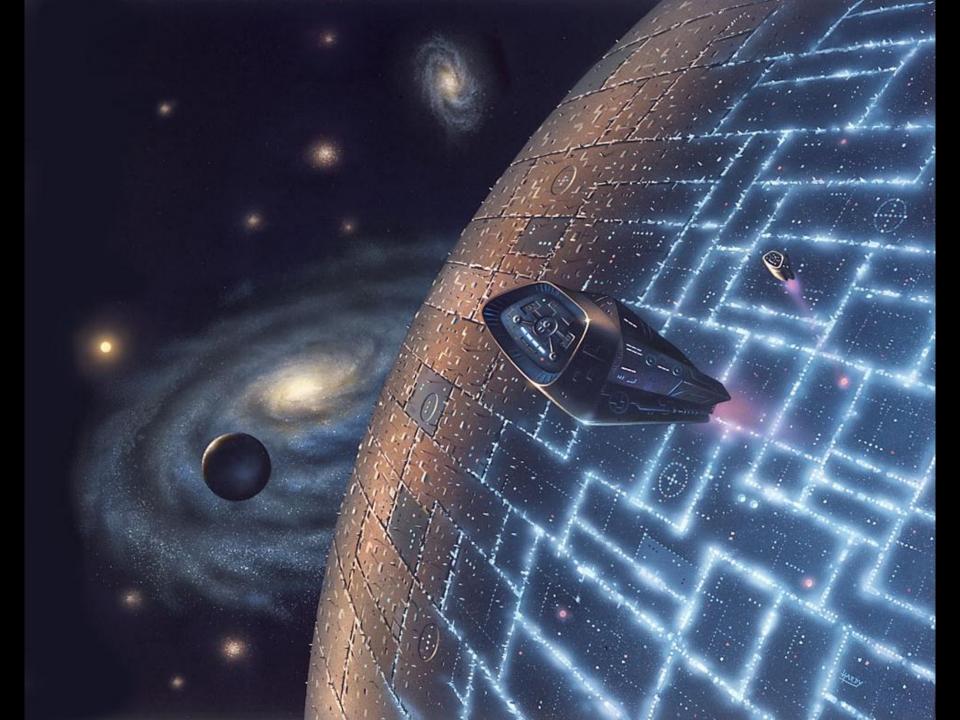




"A journey of a thousand miles begins with a single step." - Lao-tzu







Self-Replication, Strandbeest, and the Game of Life.

What John von Neumann, Theo Jansen, and John Conway can tell us about scaling the API Economy.

http://g.mamund.com/apistrat2014-talk

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API Academy – CA Technologies
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