



Collecting and Visualizing Data

Brian Suda
Codebits 02010
November 11th

Lisbon, Portugal
38° 46' 6.8"
-9° 5' 36.8"

CODEBITS



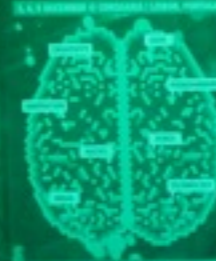
CODEBITS

ABOUT TALENT



TALKS WORKSHOPS Q&A CATERING

ABOUT TALENT

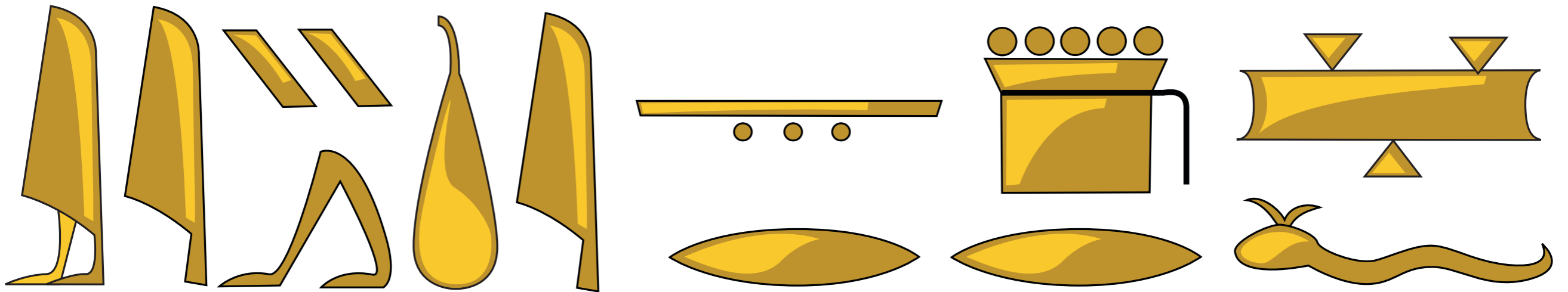


TALKS WORKSHOPS Q&A CATERING

CODEBITS
ABOUT TALENT



Remember this?

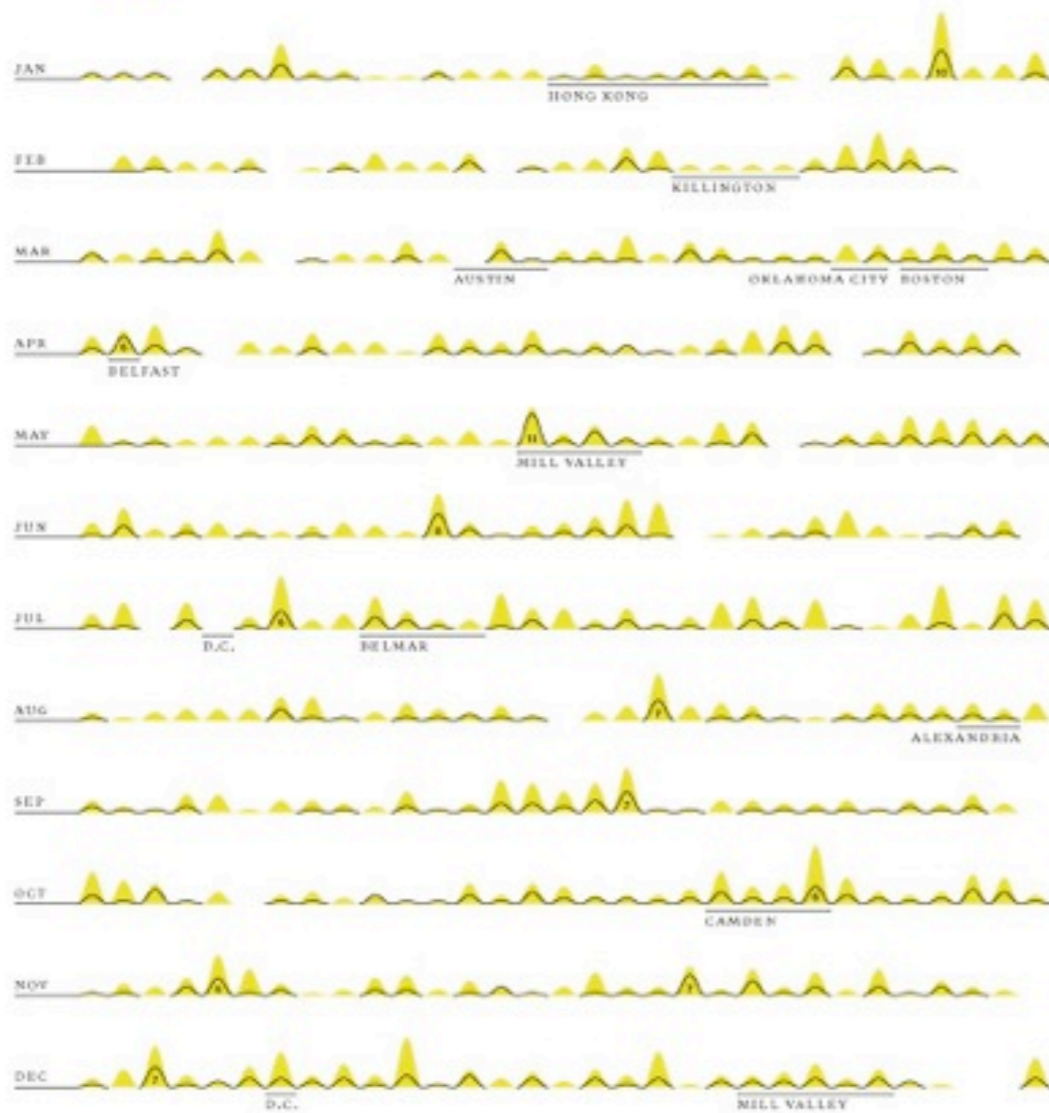


Welcome The Entire Land

Distribution

Date and location of encounters.

FIGURE 1. ENCOUNTERS / RESPONSES



TOTAL ENCOUNTERS

1,761

COUNTRIES INCLUDED

Three

U.S.A., HONG KONG AND NORTHERN IRELAND

AVERAGE ENCOUNTERS PER DAY

4.8

STATES INCLUDED

Nine

CALIFORNIA, MAINE, MASSACHUSETTS, NEW JERSEY, NEW YORK, OKLAHOMA, TEXAS, VERMONT, VIRGINIA, PLUS WASHINGTON D.C.

SURVEYS COMPLETED

560

DAYS WITH REPORTS

254

70% OF THE YEAR

CUMULATIVE RESPONSE RATE

32%

CONTRIBUTORS

210

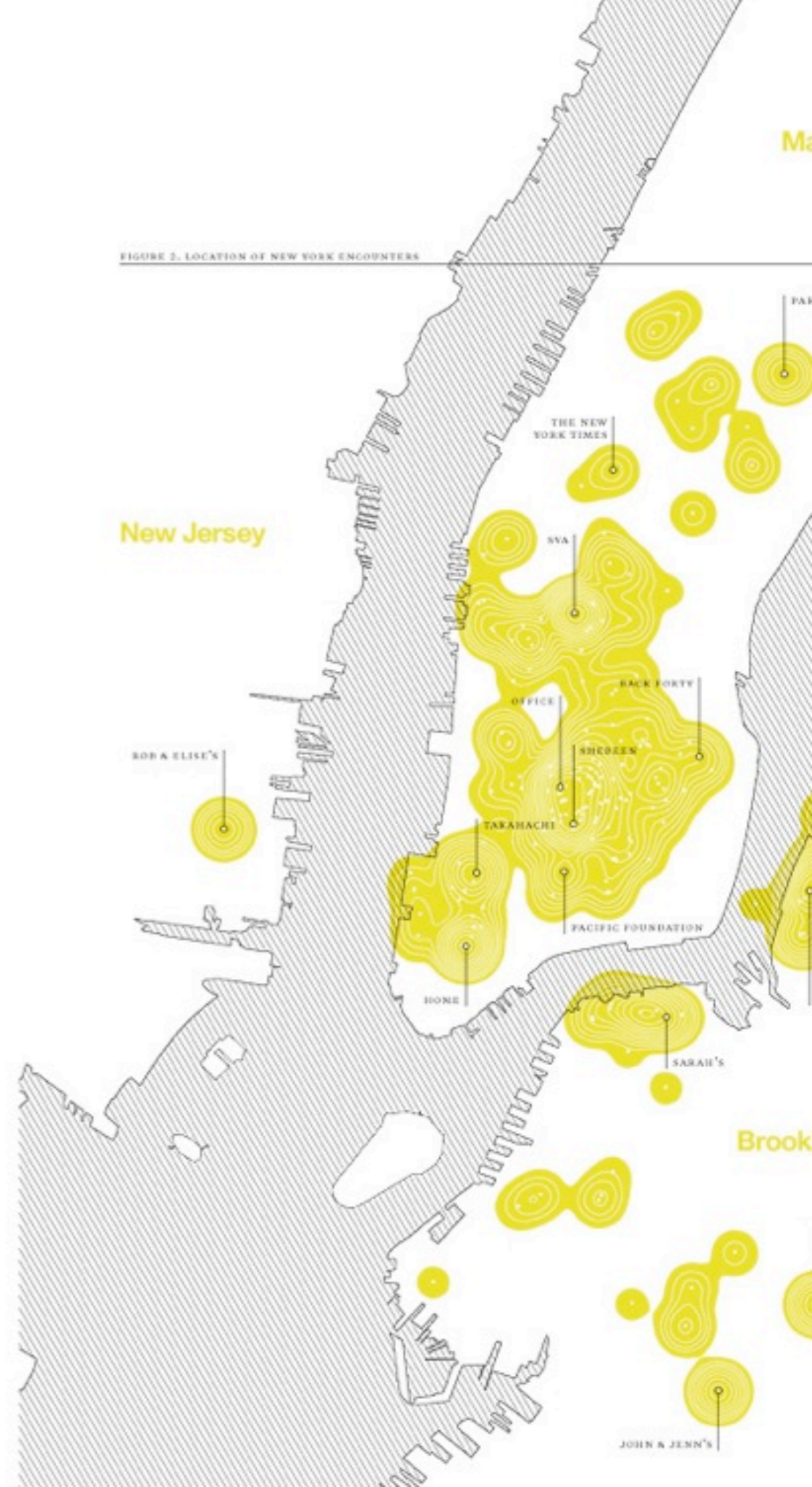
AVERAGE 2.66 REPORTS PER PERSON

METHODOLOGY

Throughout 2009, friends, family, co-workers and acquaintances of Nicholas Felton were asked to report on his activities whenever they met.

All data on the following pages was compiled from the responses of these participants to a variety of questions concerning their encounter.

FIGURE 2. LOCATION OF NEW YORK ENCOUNTERS



Today's focus



MON

TUE

WED

THU

FRI
1
2

SAT
2

SUN
3

JANUARY

03

2010
January
First
Weeks



Line
Design
Moment

363

MON

TUE

WED

THU

FRI
1
2

SAT
2

SUN
3

JANUARY

02

2010
January
First
Weeks



Line
Design
Moment

364

MON

TUE

WED

JANUARY

365

jan	f	s	s	m	t	w	t	
feb	m	t	w	t	f	s	s	■
mar	m	t	w	t	f	s	s	
apr	t	f	s	s	m	t	w	●
may	s	s	m	t	w	t	f	
jun	t	w	t	f	s	s	m	●
jul	t	f	s	s	m	t	w	
aug	s	m	t	w	t	f	s	
sept	w	t	f	s	s	m	t	●
oct	f	s	s	m	t	w	t	
nov	m	t	w	t	f	s	s	●
dec	w	t	f	s	s	m	t	

jan	s	s	m	t	w	t	f	
feb	t	w	t	f	s	m	s	■
mar	t	w	t	f	s	m	s	
apr	f	s	s	m	t	t	w	●
may	s	m	t	w	t	f	s	
jun	w	t	f	s	s	t	m	●
jul	f	s	s	m	t	t	w	
aug	m	t	w	t	f	s	s	
sept	t	f	s	s	m	w	t	●
oct	s	s	m	t	w	f	t	
nov	t	w	t	f	s	m	s	●
dec	t	f	s	s	m	w	t	

02010

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				(optional.is)

02011

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				(optional.is)



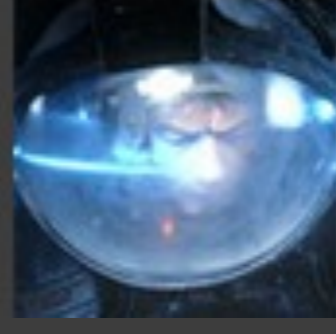
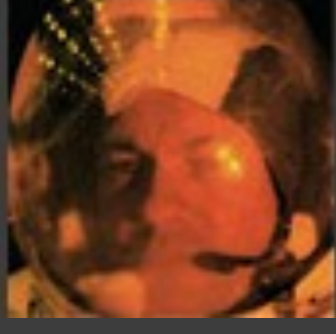
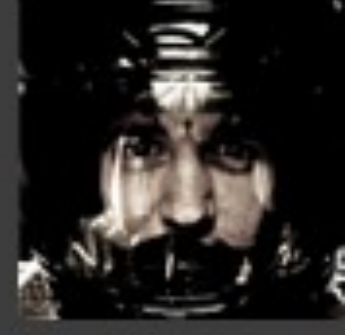
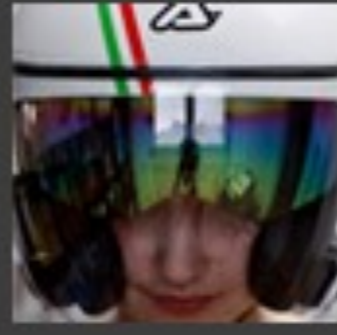
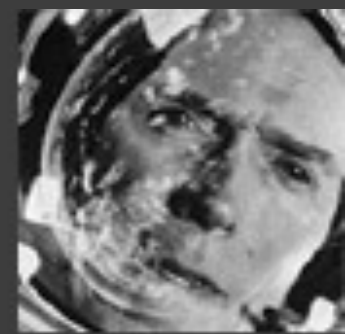
jan	s	m	t	w	t	f	s
feb	w	t	f	s	s	m	t
mar	t	f	s	s	m	t	■
apr	s	m	t	w	t	f	s
may	t	w	t	f	s	s	m
jun	f	s	s	m	t	w	t
jul	s	m	t	w	t	f	s
aug	w	t	f	s	s	m	t
sept	s	s	m	t	w	t	f
oct	m	t	w	t	f	s	s
nov	t	f	s	s	m	t	w
dec	s	s	m	t	w	t	f

02012

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(optional.is)

optional.is



GetColor()



#36b0cf

```
$hex = substr(md5("13:00"),0,6);
```

Jan = #e68564

12:00 = #18940d

Lisbon = #260b4e

Codebits = #5bec08

Portual = #ea71b3

Needs a friend

```
function getContrast($hexcolor){  
    return (hexdec($hexcolor) > 0xfffff/2)?'black':'white';  
}
```

Jan = #e68564

12:00 = #18940d

Lisbon = #260b4e

Codebits = #5bec08

Portual = #ea71b3

Gradient



```
function stepper($angle){
    $a = $angle-10;
    if( $a > 170) { $a = 180-($a-180); }
    $a = $a/10;

    $steps = 19;

    $r1 = 255;
    $g1 = 255;
    $b1 = 255;
    $r2 = 0;
    $g2 = 76;
    $b2 = 159;

    $steps = ($steps - 1);
    $r_diff = abs($r1-$r2)/$steps;
    $g_diff = abs($g1-$g2)/$steps;
    $b_diff = abs($b1-$b2)/$steps;

    $r1 = $r1 - ($r_diff*$a);
    $g1 = $g1 - ($g_diff*$a);
    $b1 = $b1 - ($b_diff*$a);

    return
    str_pad(dechex($r1),2,0,STR_PAD_LEFT).
    str_pad(dechex($g1),2,0,STR_PAD_LEFT).
    str_pad(dechex($b1),2,0,STR_PAD_LEFT);
}
```

Accessibility







Types of color blindness



RINA
Cat
Crew

ER DER EN BIEKEN
KÖNIGIN U

DAN



Deuteranopia

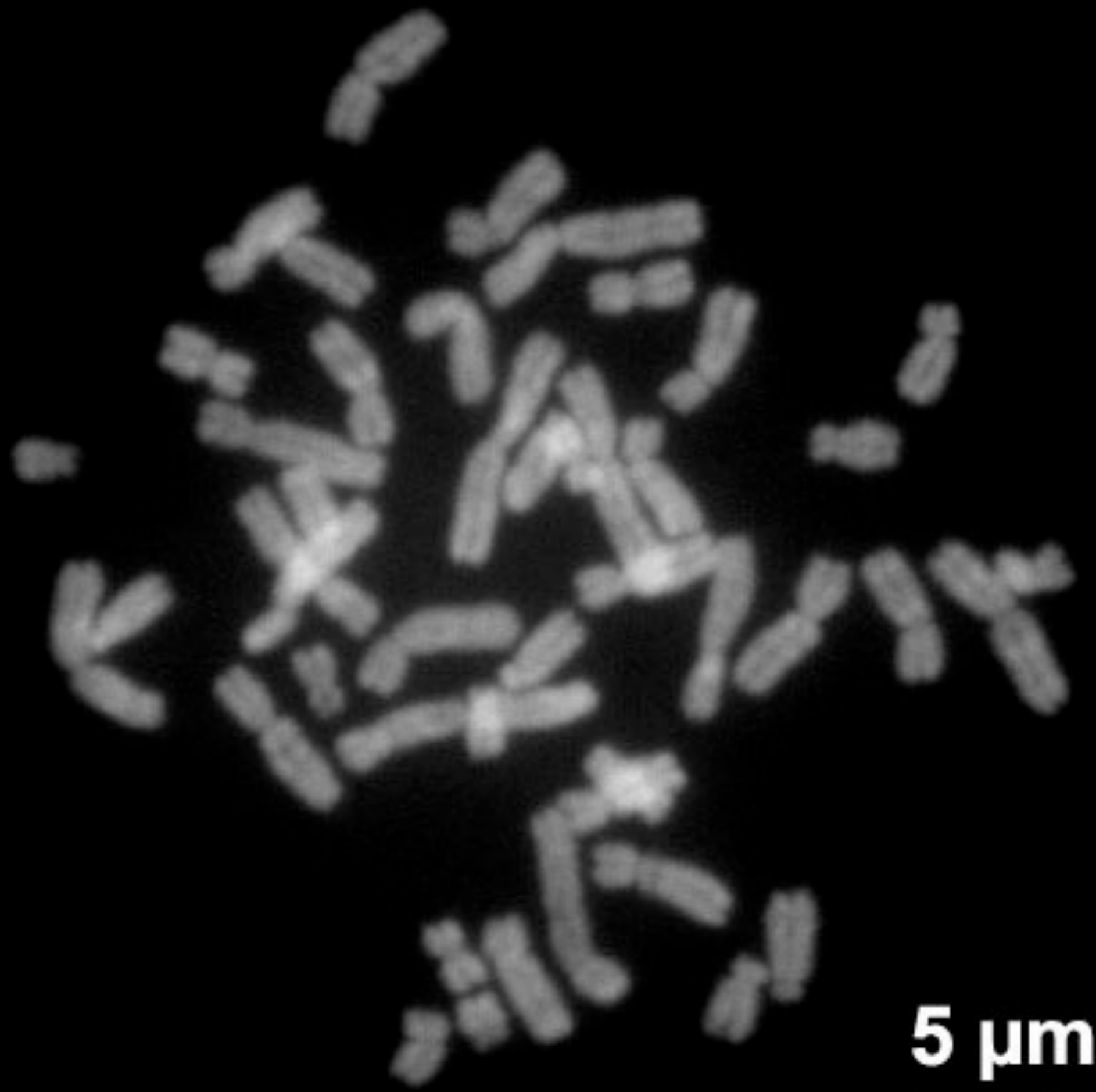


Protanopia



Tritanopia





Double X Chromosome

Pink vs. Blue







Color and Language

7 Stages of color

Stage 1

Stage 2

Stage 3



Stage 4



Stage 5



Stage 6

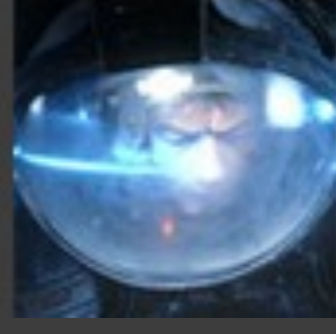
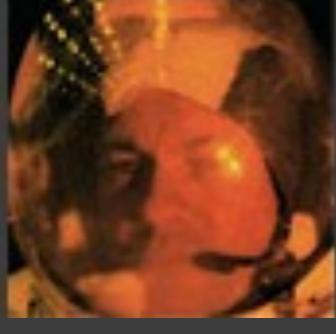
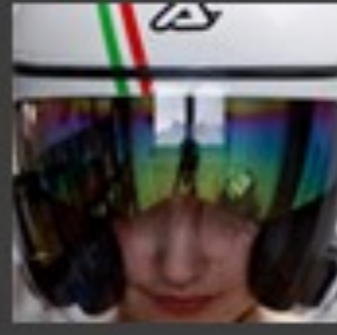
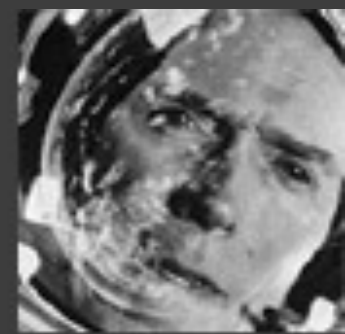


Stage 7





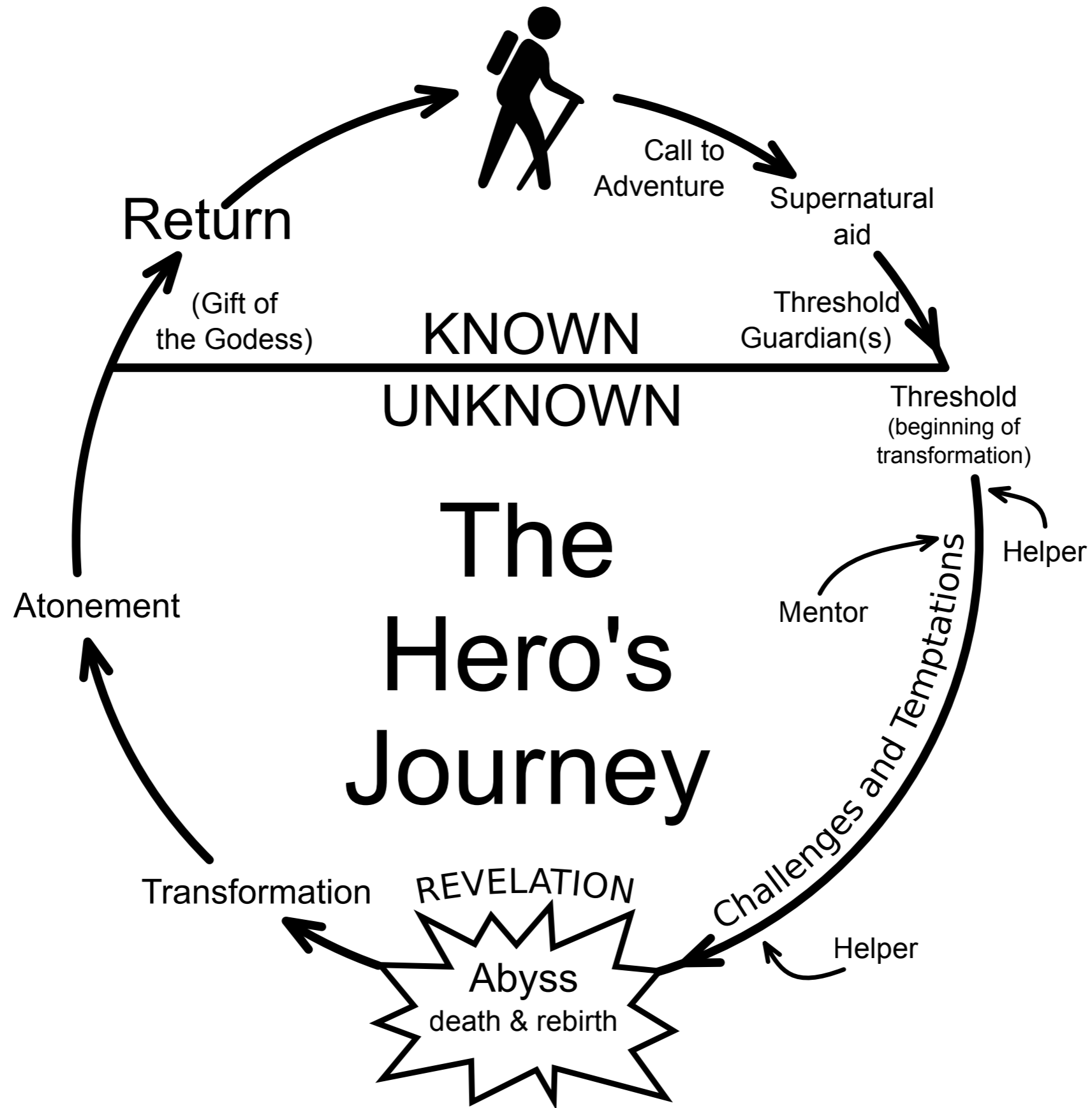






Telling a story

7 Stages of a mythic journey



<http://en.wikipedia.org/wiki/Monomyth>

The Image



The Embarkation



The Labyrinth



The Draw



The Payoff



The Return



The Memento



**What does this
have to do with
visualizations?**

Examples

Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en lettres des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre. Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davoust qui avaient été détachés sur Minsk et Mohilow et qui rejoignent vers Orscha et Wilkoc, avaient toujours marché avec l'armée.

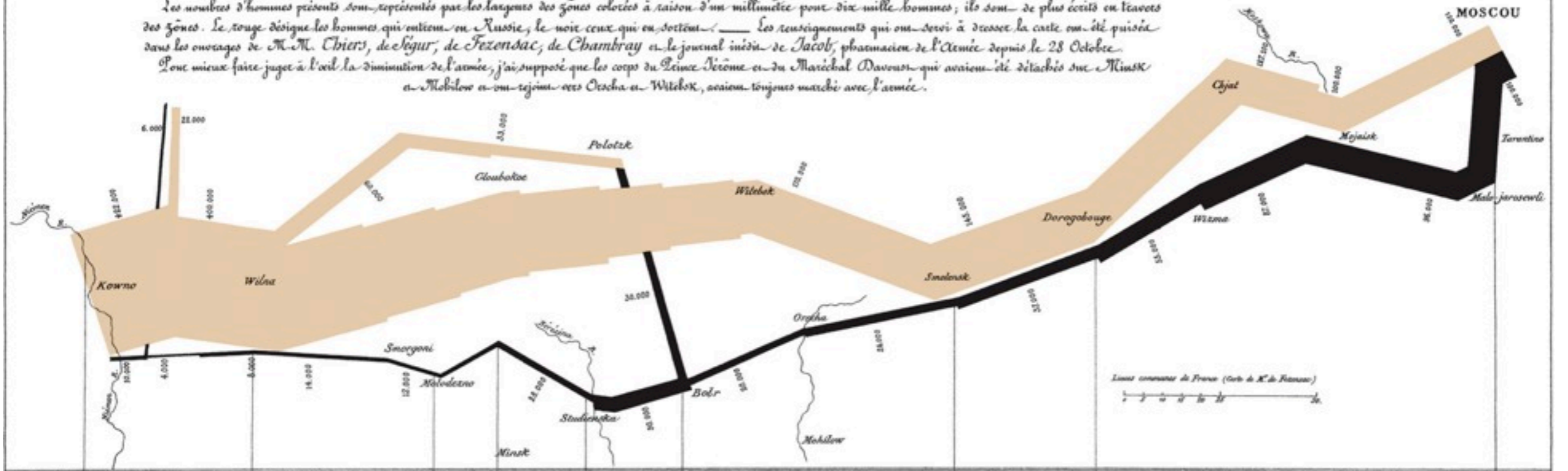
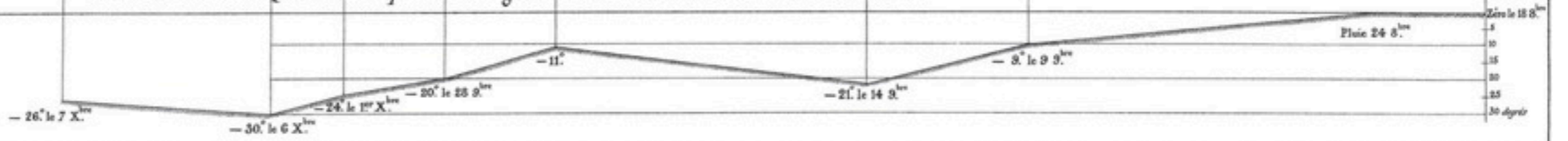


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niemen gelé.

Adm. par Régis, 1. Par. 5^e Maria 51 0^{me} à Paris.

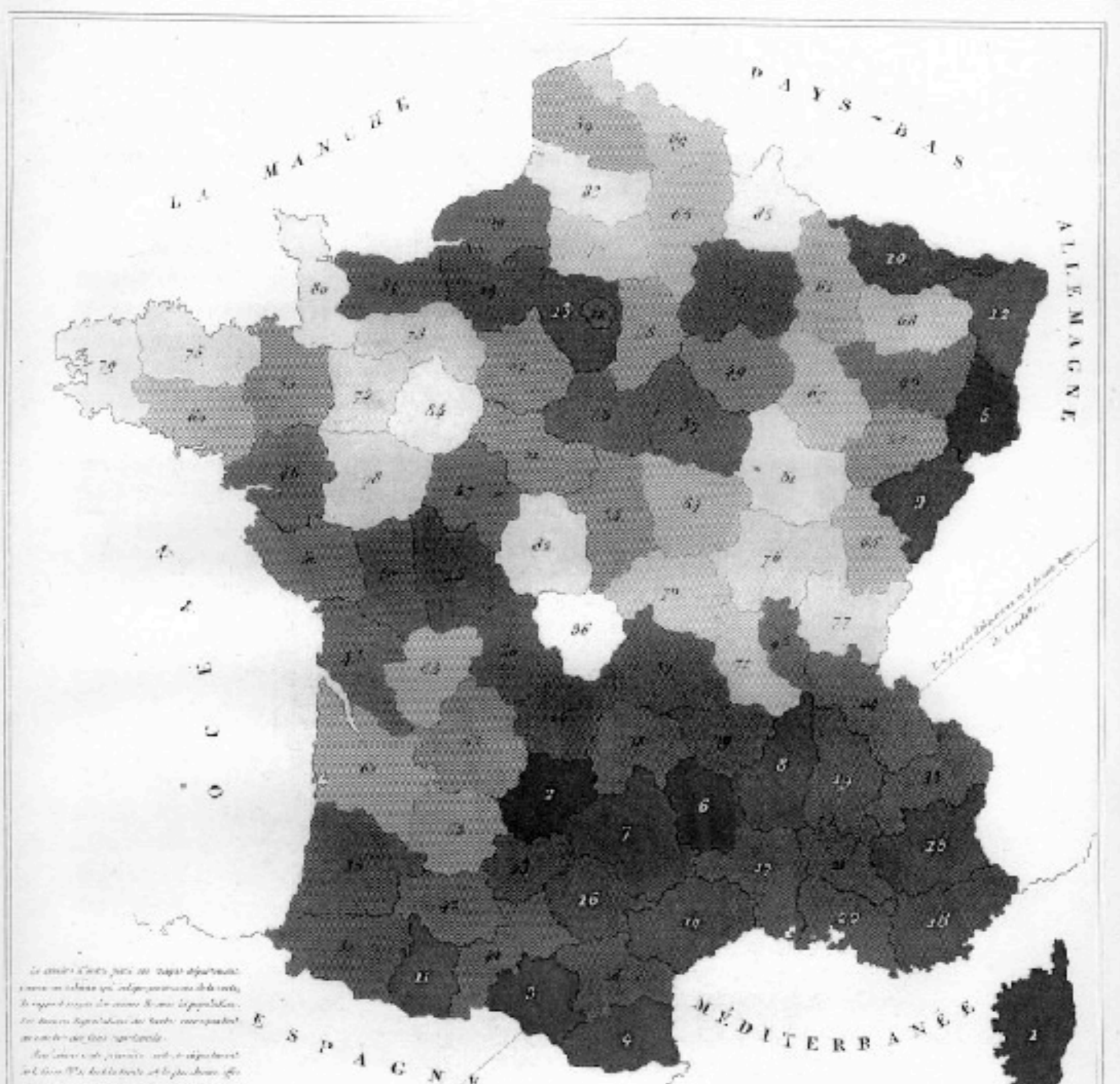
Imp. Lib. Régis et Bourdier.



CRIMES CONTRE LES PERSONNES.

Statistique par arrondissement

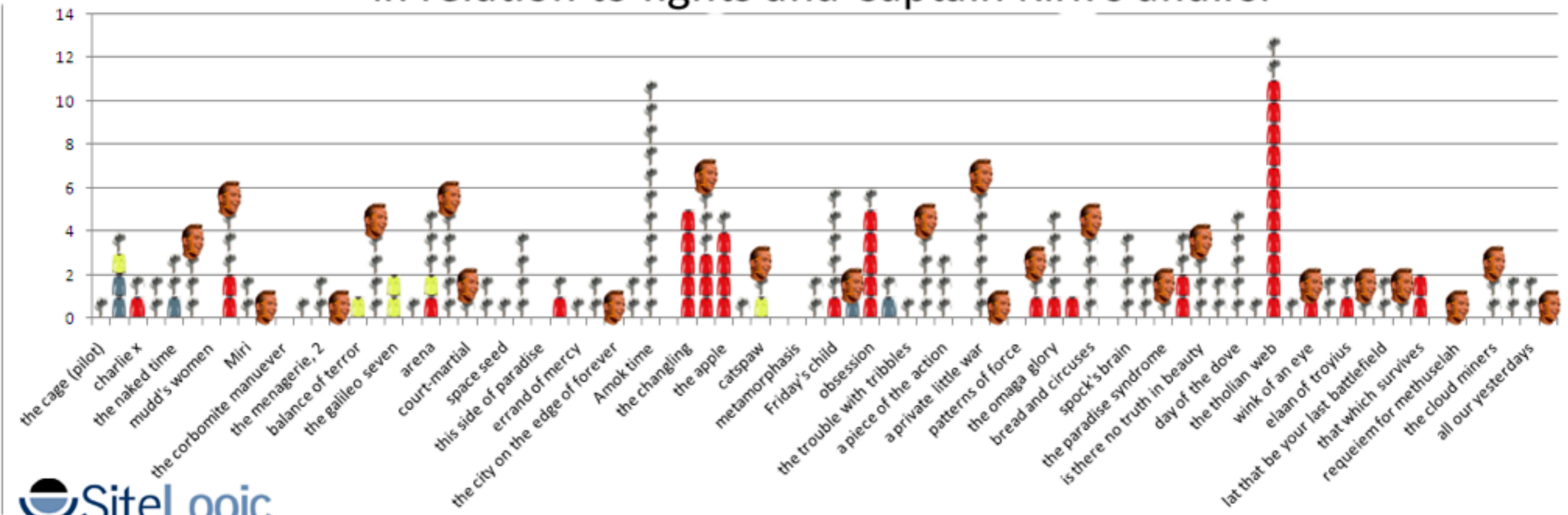
1857



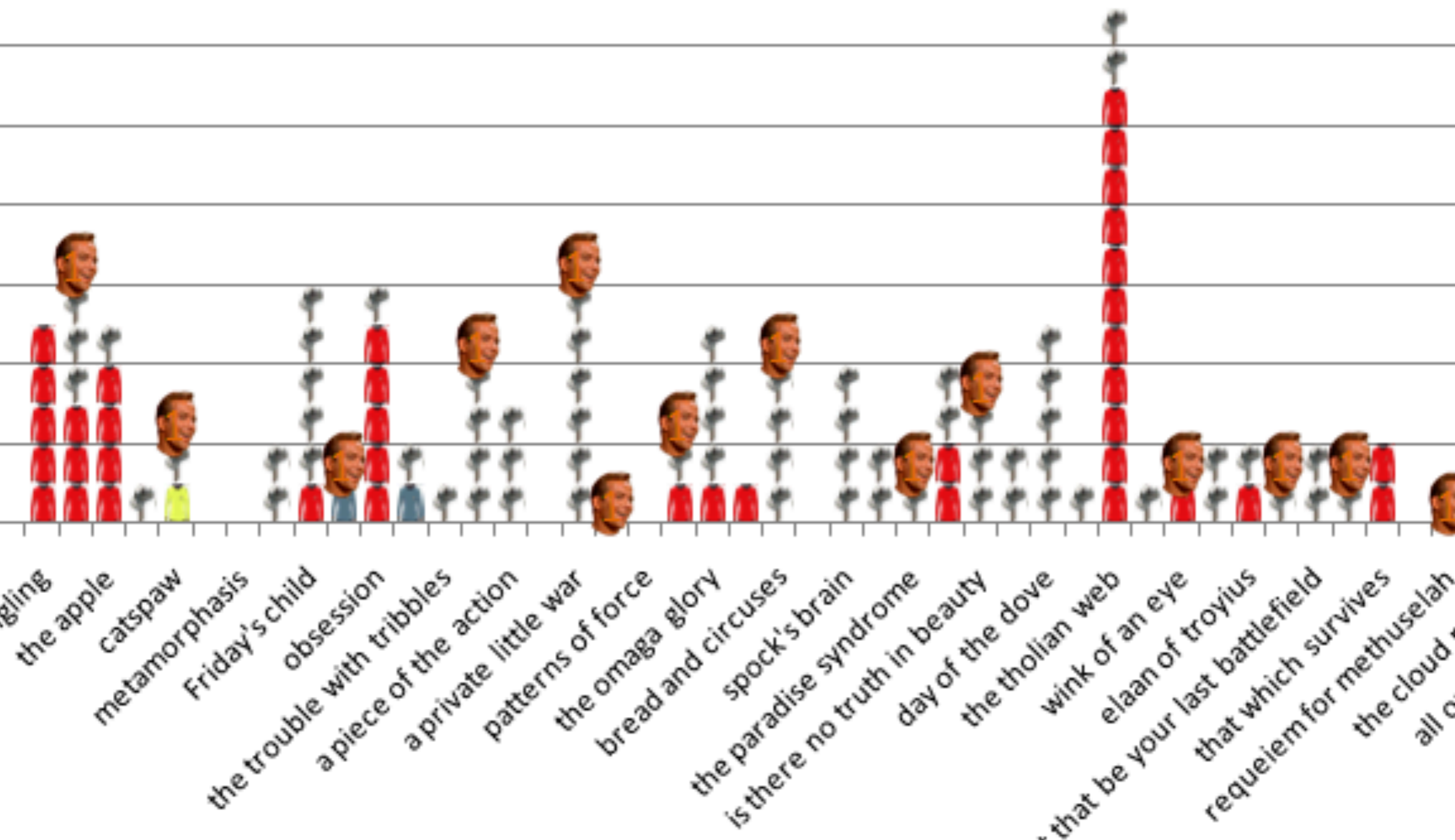
Red shirt theory



Crewmember Deaths; by shirt color, by episode, in relation to fights and Captain Kirk's affairs.



deaths; by shirt color, by episode,
ights and Captain Kirk's affairs.



**A journey to
the centre of
the pie chart**

How to build it

- Several quick and dirty scripts to do the work
- I like php, you can use what ever
- Simple arrays to hold the data
- Loop through and generate svg
- Edit that svg in illustrator or inkscape

<SVG>

```
<?xml version="1.0" standalone="no"?>  
<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN"  
"http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">
```

```
<svg version="1.1" xmlns="http://www.w3.org/2000/svg">
```

```
<rect width="300" height="100"  
  style="fill:rgb(0,0,255);  
  stroke-width:1;  
  stroke:rgb(0,0,0)"  
/>
```

```
</svg>
```

Examples

<http://tinyurl.com/codebits-svg>

NORDKYN

WHERE
NATURE
RULES



NORDKYN

10.01.09
SSW 14.3M/S
3.2°



NORDKYN

11.01.09
S 8.9M/S
3.3°



NORDKYN

12.01.09
NW 12.1M/S
-2.8°



NORDKYN

13.01.09
N 9.4M/S
-6.8°



NORDKYN

14.01.09
NW 8.2M/S
-5.8°



NORDKYN

04.02.09
E 13.4M/S
-4.5°



NORDKYN

05.02.09
WSW 8.8M/S
-8.5°



NORDKYN

08.02.09
ENE 11.1M/S
-3.8°



NORDKYN

07.02.09
SW 7.2M/S
-13.5°



NORDKYN

08.02.09
SSE 4.4M/S
-13.3°



NORDKYN

01.03.09
SSW 7.9M/S
-3.8°



NORDKYN

02.03.09
SSW 13.2M/S
-8°



NORDKYN

03.03.09
SW 8.7M/S
-0.7°



NORDKYN

04.03.09
SW 3M/S
-2.2°



NORDKYN

05.03.09
WSW 4.1M/S
-2.7°



NORDKYN

26.03.09
S 8.9M/S
-6.1°



NORDKYN

27.03.09
SE 8.9M/S
-5.4°



NORDKYN

28.03.09
SW 3.1M/S
-3.6°



NORDKYN

29.03.09
SSE 3.4M/S
-1.8°



NORDKYN

30.03.09
ESE 8.7M/S
1.1°

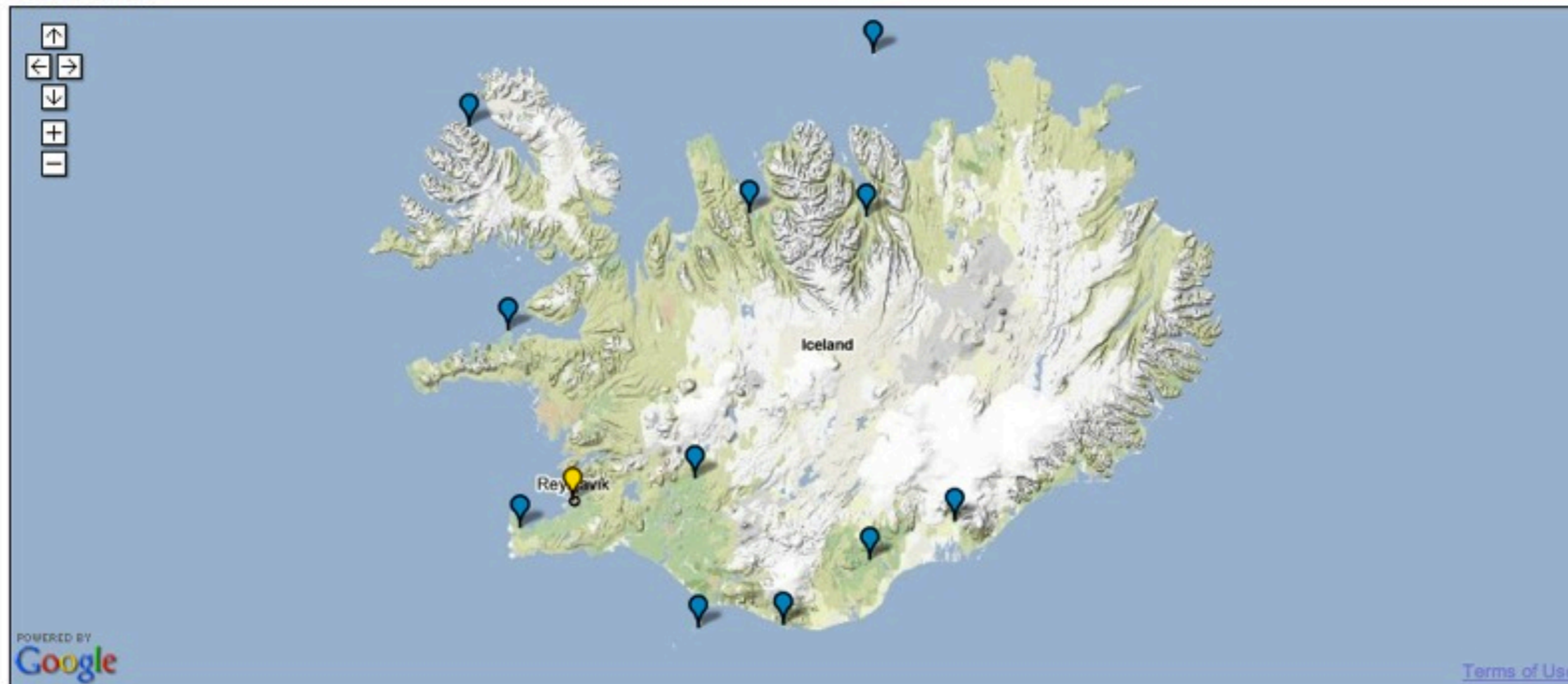


Gagnatorg veðurupplýsinga

Tímabil

• Frá 30. 10. 2009 • Tíðni Mánuður

Veðurstöðvar



- Reykjavík
- Kirkjubæjarskogar
- Stykkishólmur
- Bolungavík
- Vatnsskoog
- Stórhöfði
- Skaftafell
- Bergstaða
- Grímsey
- Hjarðarnes
- Akureyri
- Keflavík

Select

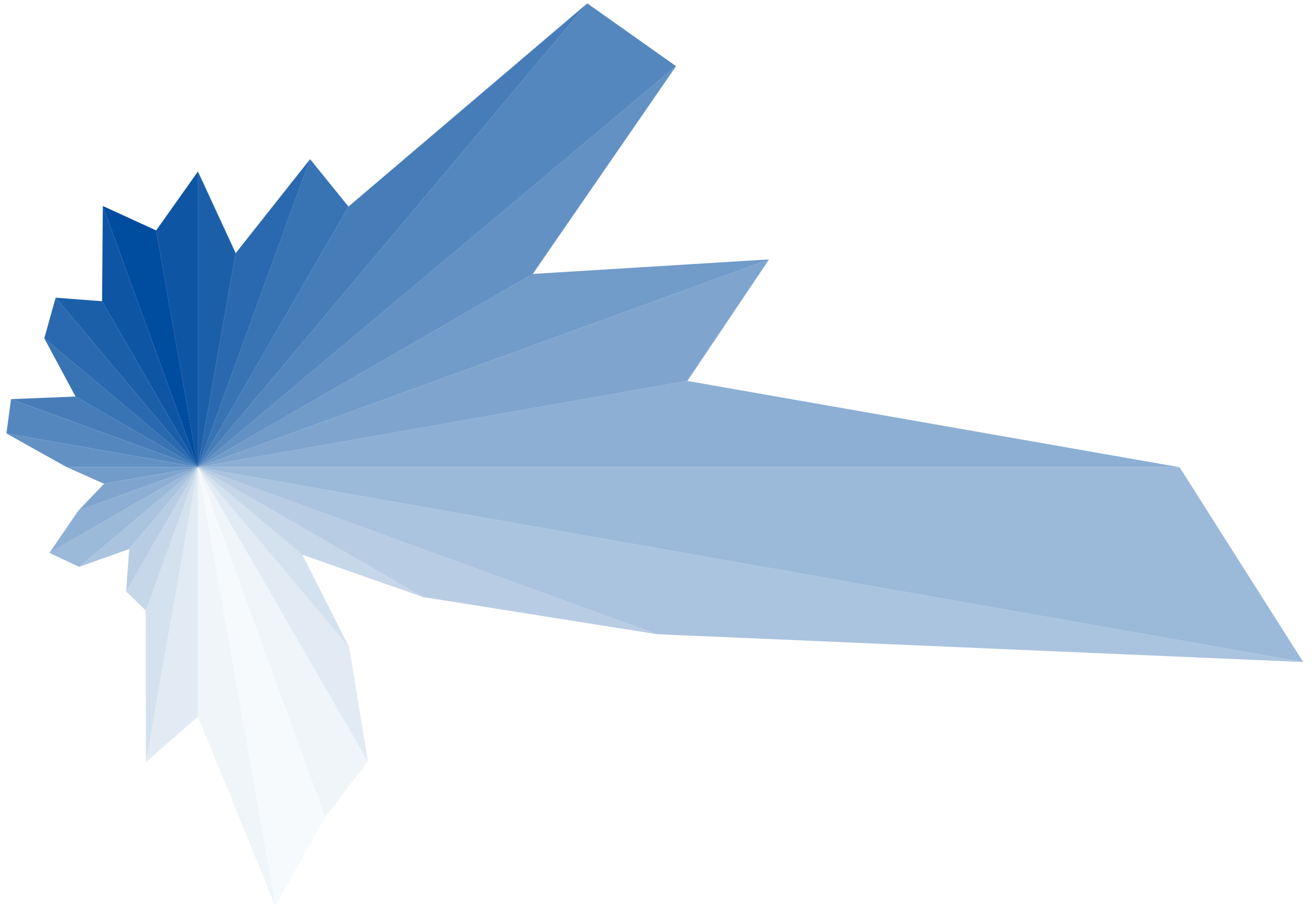
▼ Mæling

- Lofthiti
- Vindátt
- Rakastig
- 10 mín. meðalvindhraði
- Úrkoma

Select Clear

► Upprunaleg gildi

► Gæðastimplar



```
echo '<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN"
"http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">
<svg xmlns="http://www.w3.org/2000/svg" version="1.1">';
```

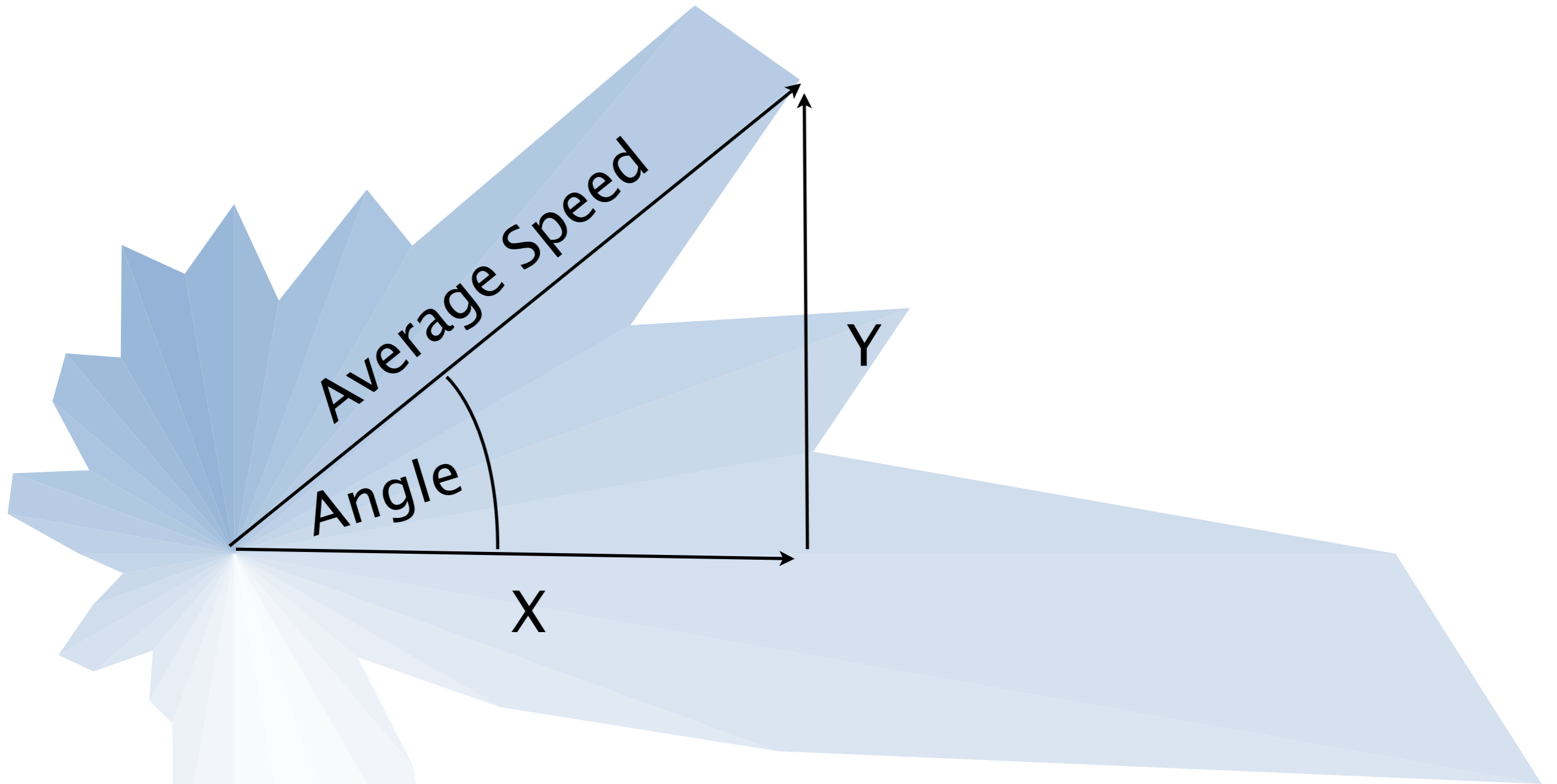
```
$arm_pos = 0;
foreach($dirs as $k=>$v){
    $length = (($v/$counter)*$scaler);
    $x = 100+(sin(deg2rad($k)) * $length);
    $y = 100+(cos(deg2rad($k)) * $length);
```

```
$arm_pos = $k+10;
if($arm_pos > 360) { $arm_pos = 10; }
```

```
$length = (($dirs[$arm_pos]/$counter)*$scaler);
```

```
$x1 = 100+(sin(deg2rad($arm_pos)) * $length);
$y1 = 100+(cos(deg2rad($arm_pos)) * $length);
```

```
echo '<polygon points="100,100 '.$x.','.$y.' '.$x1.','.$y1.'" fill="#'.stepper($k).'" />';
}
echo '</svg>';
```



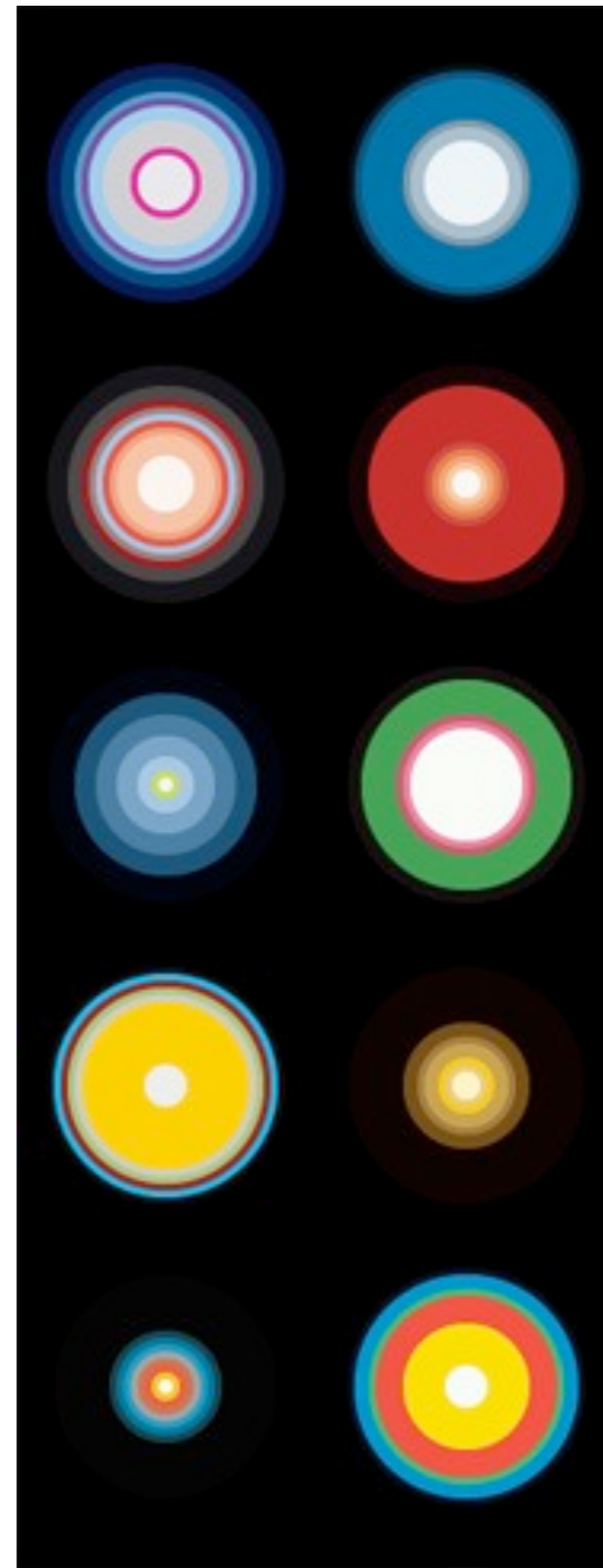
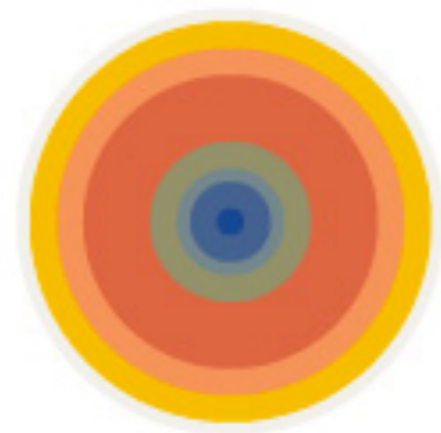
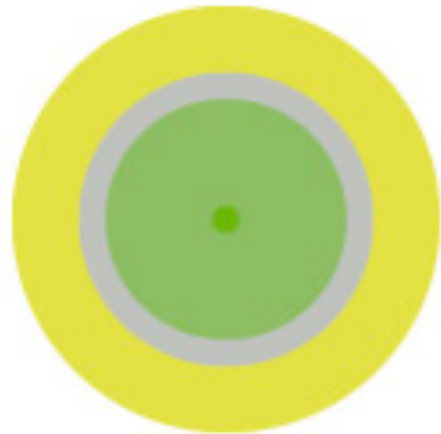
$$X = \sin(\text{Angle}) * \text{Average Speed};$$
$$Y = \cos(\text{Angle}) * \text{Average Speed};$$



NOTES

This visualization ran as a full page in the June 2008 issue of WIRED.

The custom algorithm in our visualization produces a signature "bull's-eye" pattern for each cover:



<http://hint.fm/projects/wired2008/>

```
echo '<?xml version="1.0" standalone="no"?>
<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN"
"http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">
```

```
<svg width="100%" height="100%" version="1.1"
xmlns="http://www.w3.org/2000/svg">
```

```
$c = (int)(($x*$y)/$scaler);
```

```
$prev = 0;
```

```
foreach($rgb as $k=>$v){
```

```
  if($v > 0) {
```

```
    $r = ($k >> 16) & 0xFF;
```

```
    $g = ($k >> 8) & 0xFF;
```

```
    $b = $k & 0xFF;
```

```
    $hex = str_pad(dechex($r),2,'0',STR_PAD_LEFT).str_pad(dechex($g),
2,'0',STR_PAD_LEFT).str_pad(dechex($b),2,'0',STR_PAD_LEFT);
```

```
    echo '<circle cx="'.$c.'" cy="'.$c.'" r="'.($c-$prev).'" fill="#'.$hex.'" />';
```

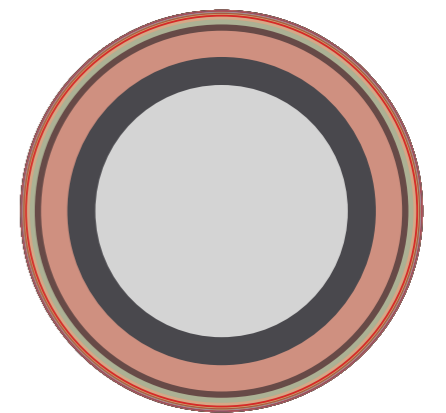
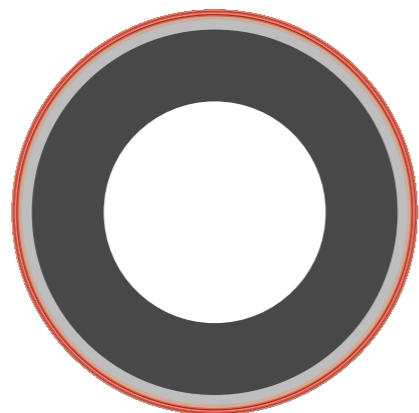
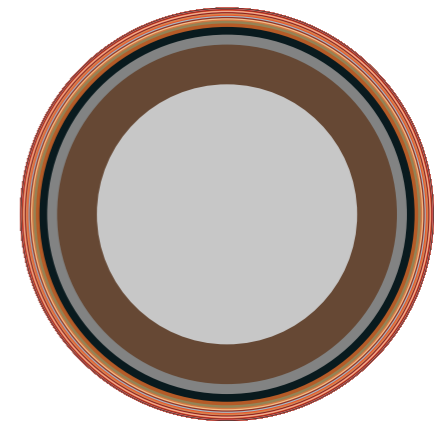
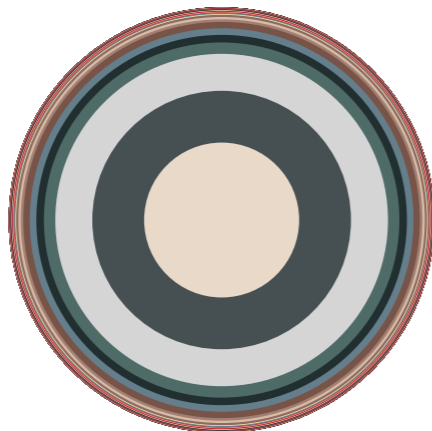
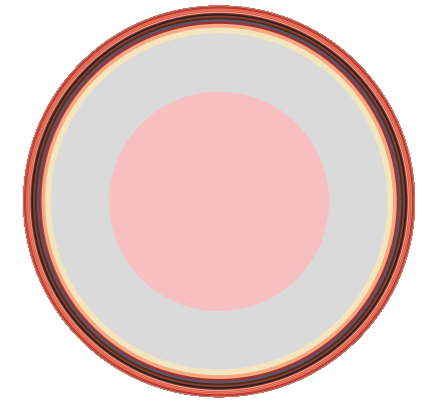
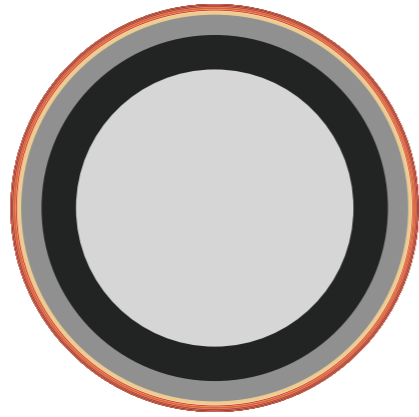
```
    echo "\n";
```

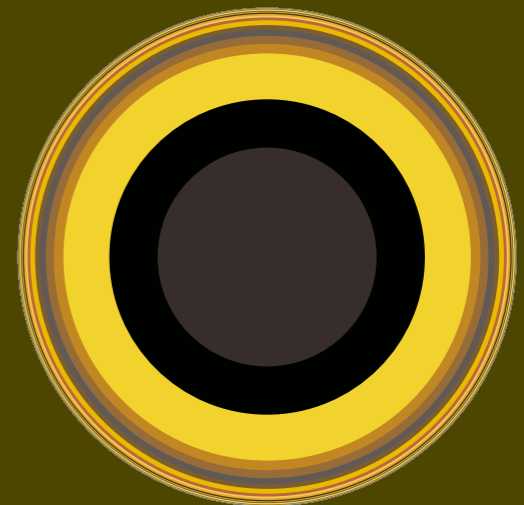
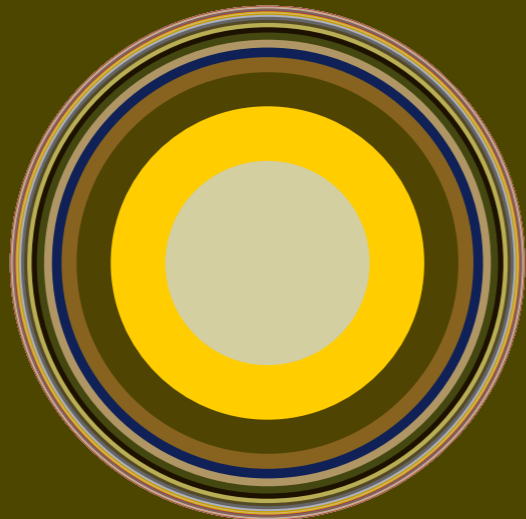
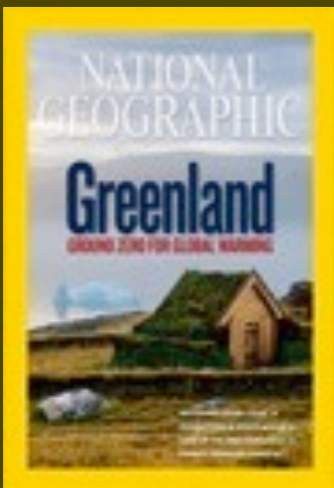
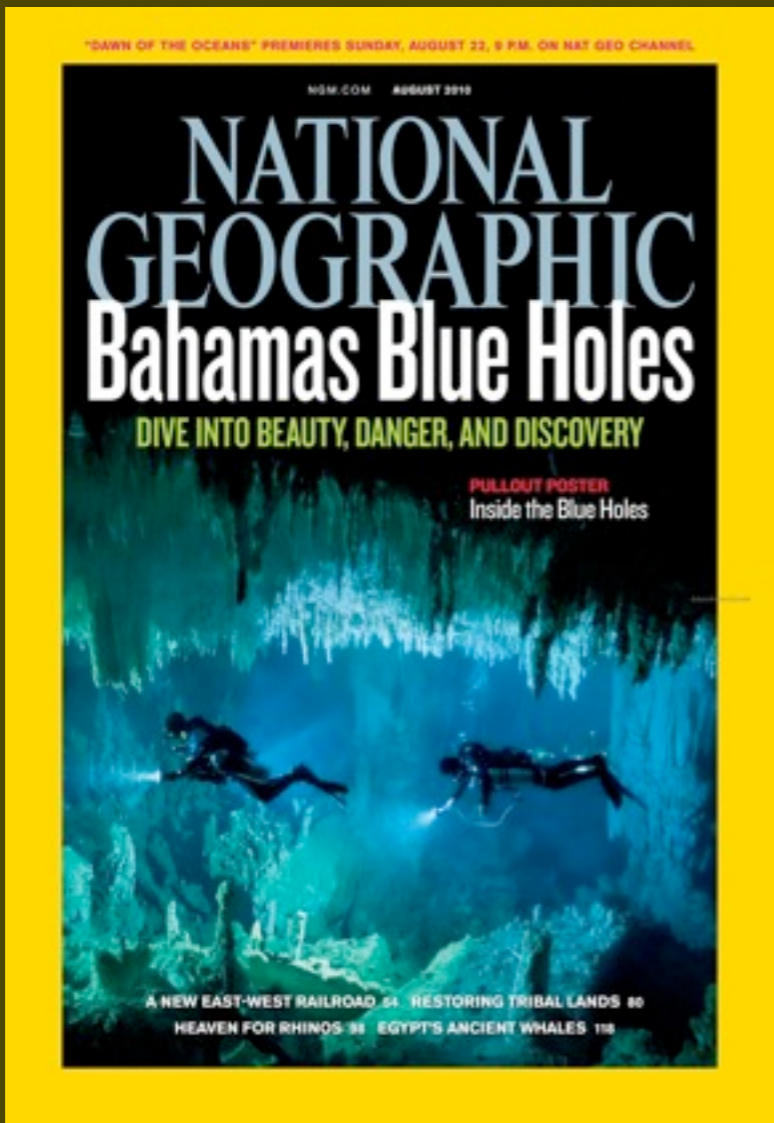
```
    $prev += (int)($v/$scaler);
```

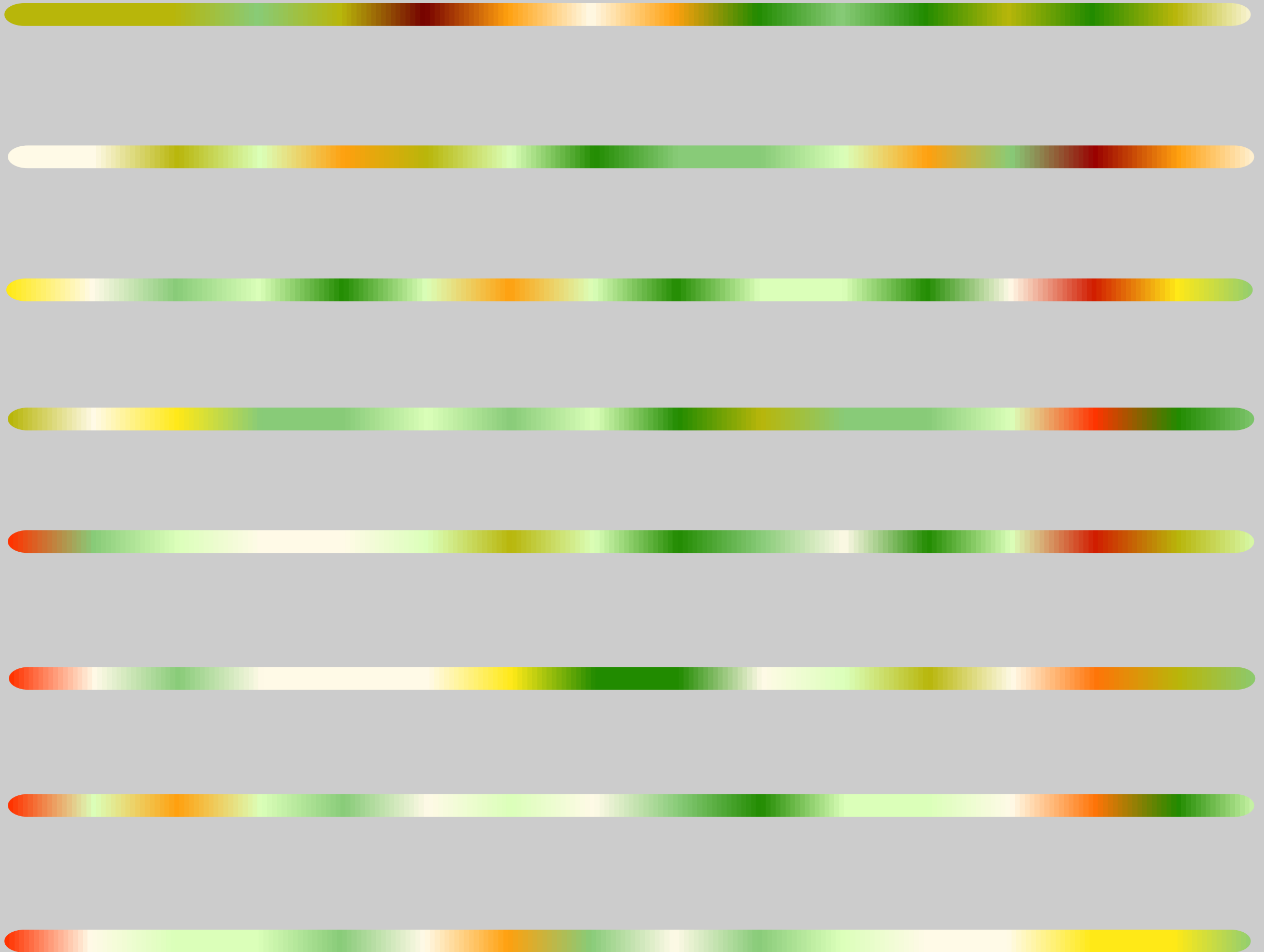
```
  }
```

```
}
```

```
echo '</svg>';
```





```

<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN" "http://www.w3.org/Graphics/SVG/1.1/DTD/
svg11.dtd">
<svg width="100%" height="100%" version="1.1" xmlns="http://www.w3.org/2000/svg">
<defs>
<?
  $values      = array(8,0,0,0,0,0,0,0,0,0,0,1,0,2,5,3);

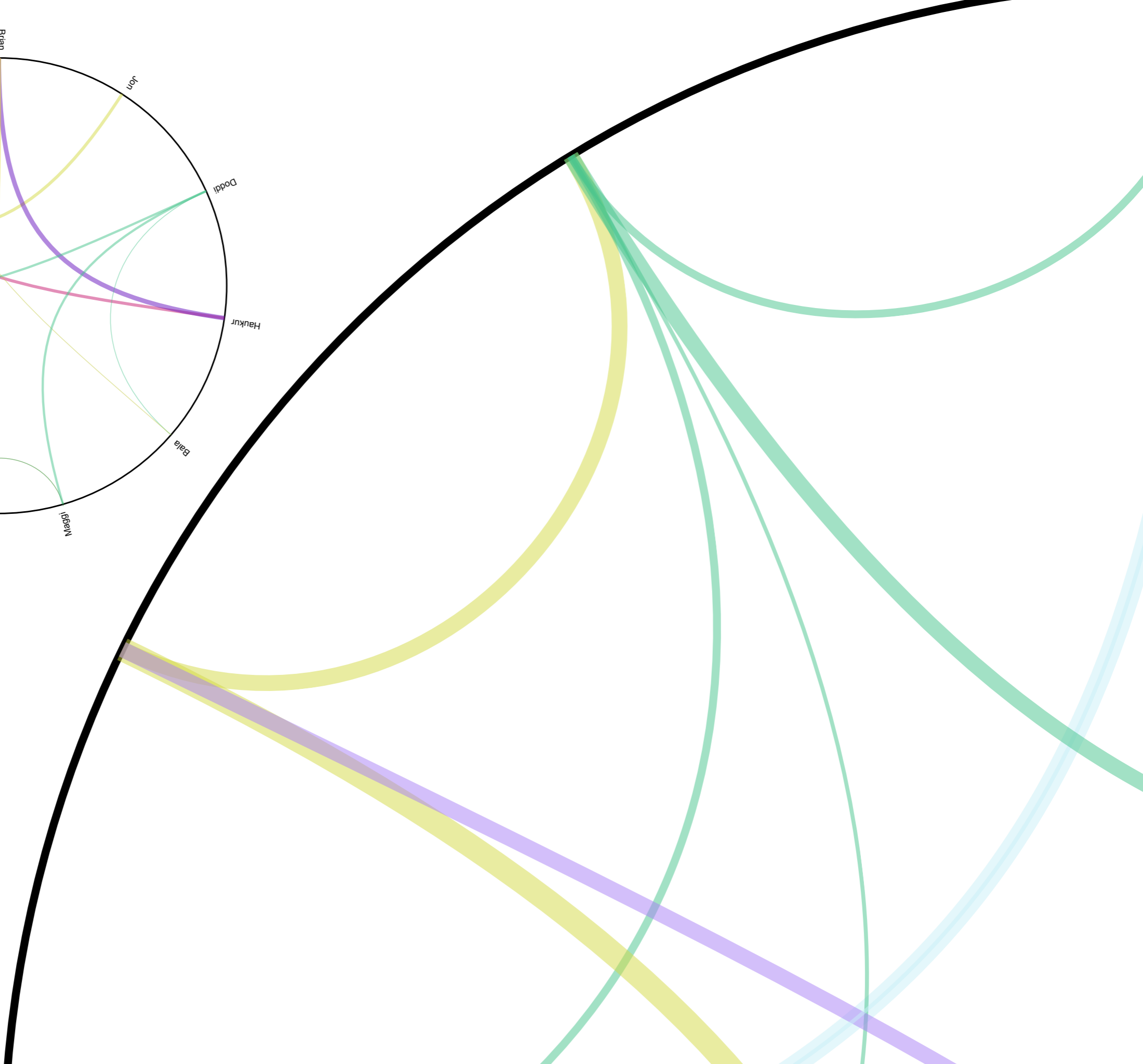
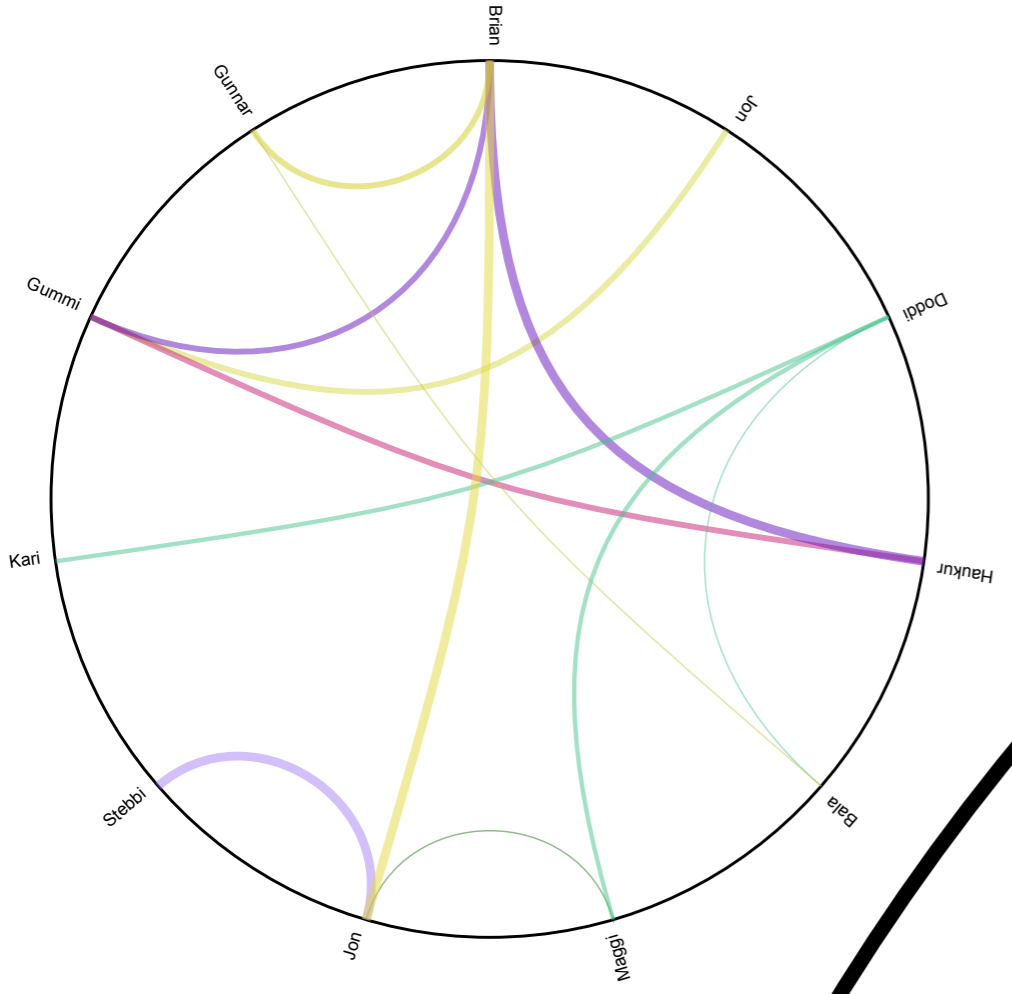
  $rangeColours = array('255,250,231','219,255,185','136,203,120','33,139,0','184,182,10','255,233,23',
'255,160,14', '255,116,8', '255,51,0','209,28,0','153,0,0','117,0,0');

  $max = max($values);
  $min = 0;
  $ranges = ceil(($max/11));
  $steps = 100/(count($values)-1);

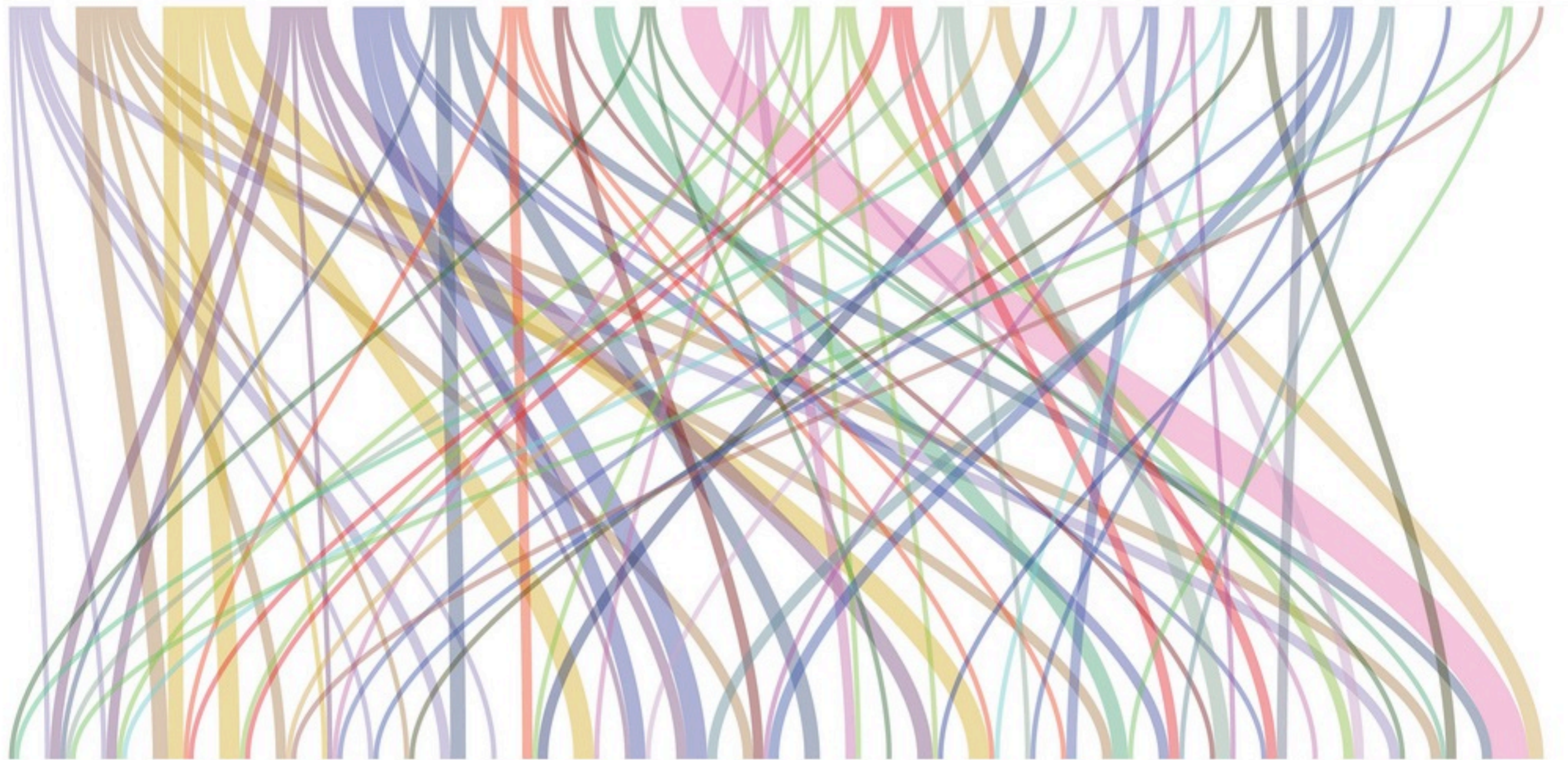
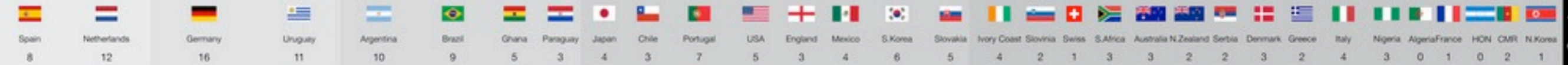
  echo '<linearGradient id="my_gradient" x1="0%" y1="0%" x2="100%" y2="0%">';
  for($i=0;$i<(count($values)-1);$i++){
    $curr = $values[$i];
    $next = $values[($i+1)];
    echo '<stop offset="'.($i*$steps). '%" style="stop-color:rgb(.'. $rangeColours[round($curr/$ranges)].');
stop-opacity:1"/>'. "\n";
    echo '<stop offset="'.(($i+1)*$steps). '%" style="stop-color:rgb(.'. $rangeColours[round($next/
$ranges)].'); stop-opacity:1"/>'. "\n";
  }
  echo '</linearGradient>';
?>
</defs>
<rect width="630" height="10" x="10" y="10" style="fill:url(#my_gradient)"/>

```

Solving a problem



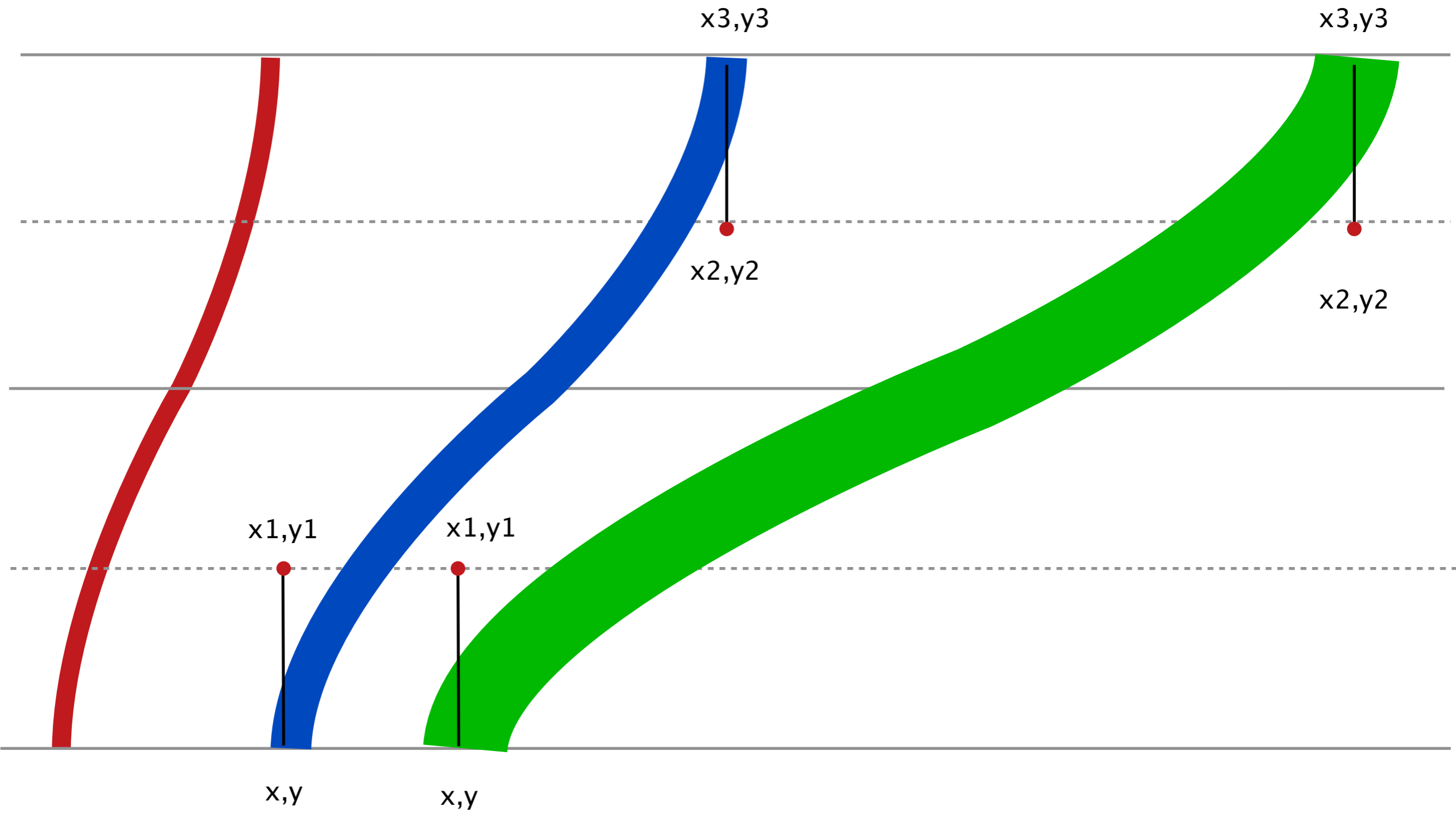
World Cup 2010



Goals Scored

Goals Conceded

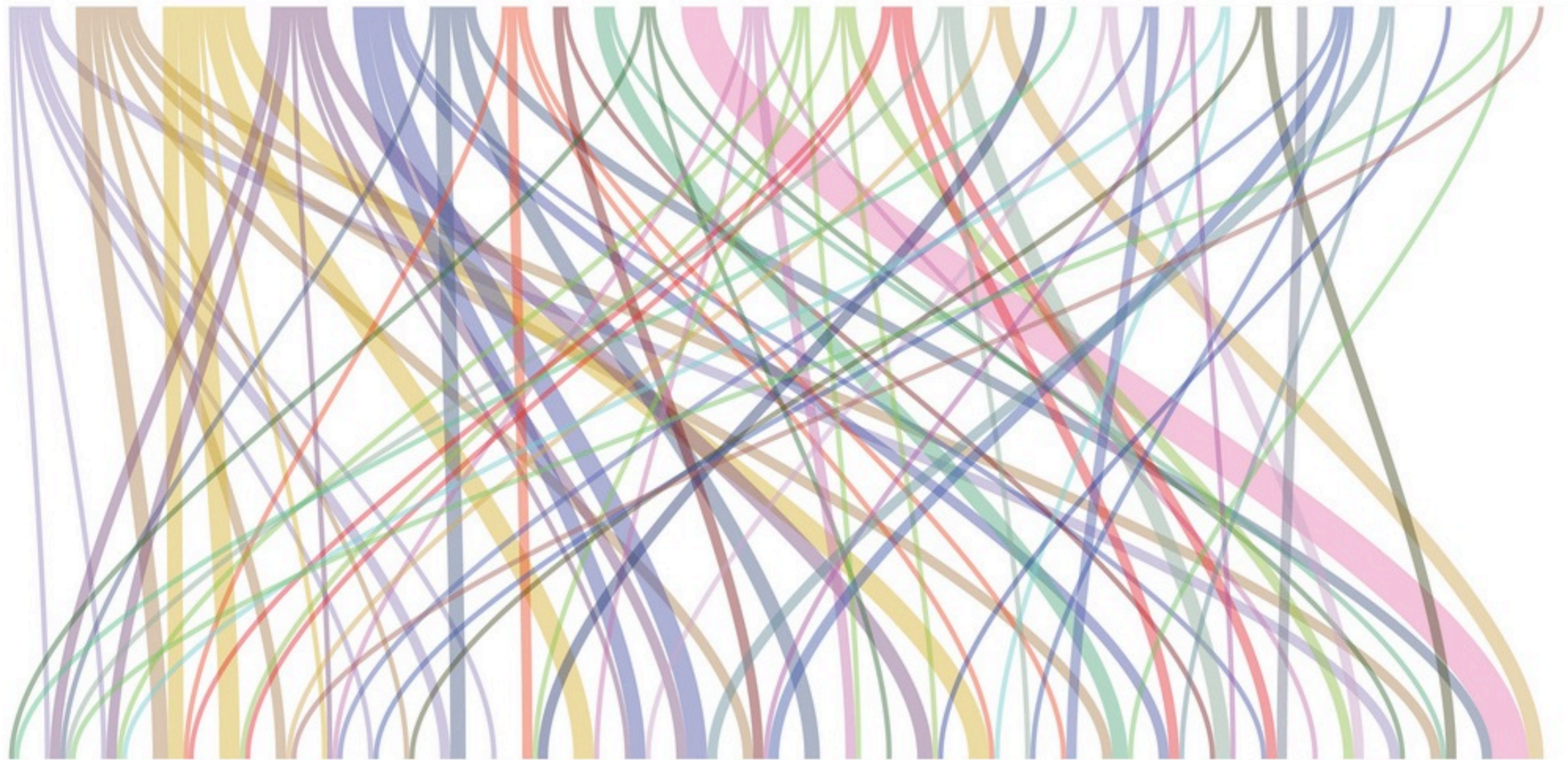
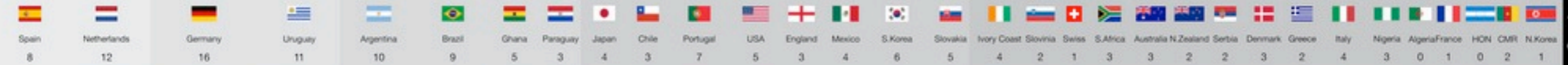
P – scripts



```
<path d="Mx,yCx1,y1,x2,y2,x3,y3"  
stroke="#ff0000" stroke-width="10" fill="none"/>
```

World Cup Story

World Cup 2010



Out in semi-finals

Out in quarter-finals

Out in round of 16

Out in group stage

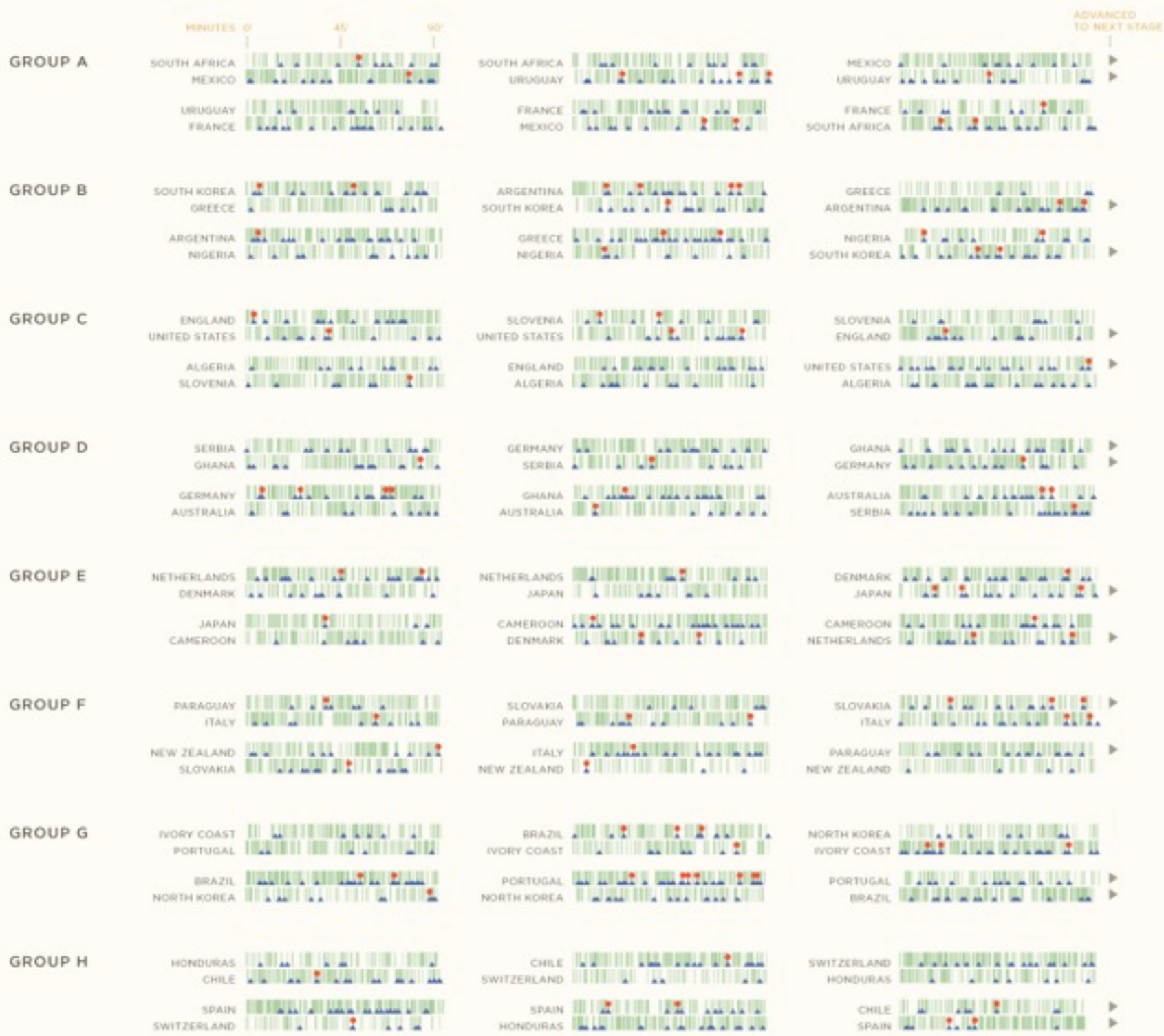
Goals Scored

Goals Conceded

SOUTH AFRICA'S FOOTBALL WORLD CHAMPIONS OF 2010

COMPLETED PASS ▲ SHOT ● GOAL

GROUP STAGE

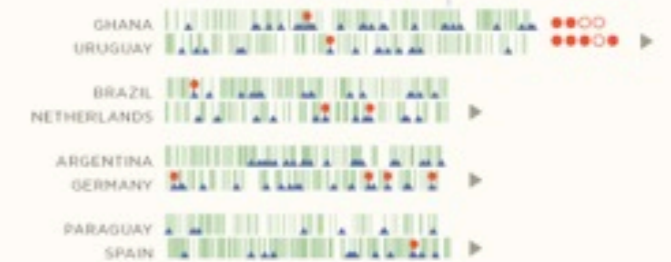


KNOCKOUT STAGE

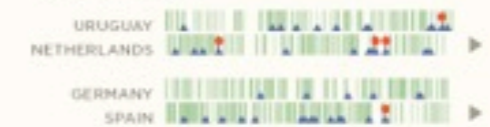
ROUND OF 16



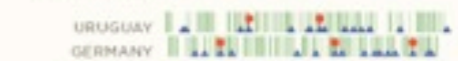
QUARTER-FINALS



SEMI-FINALS



THIRD PLACE

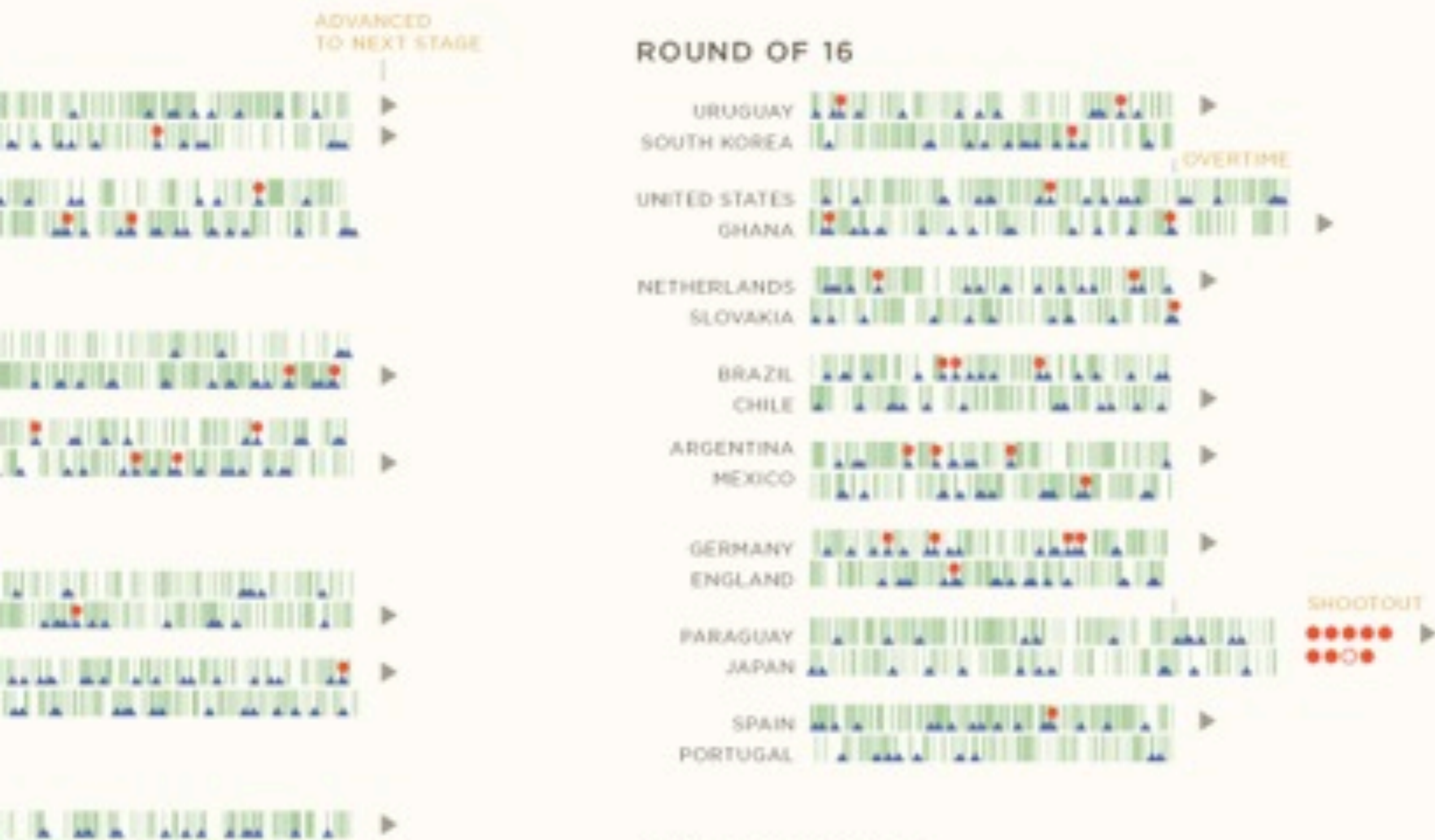


FINAL



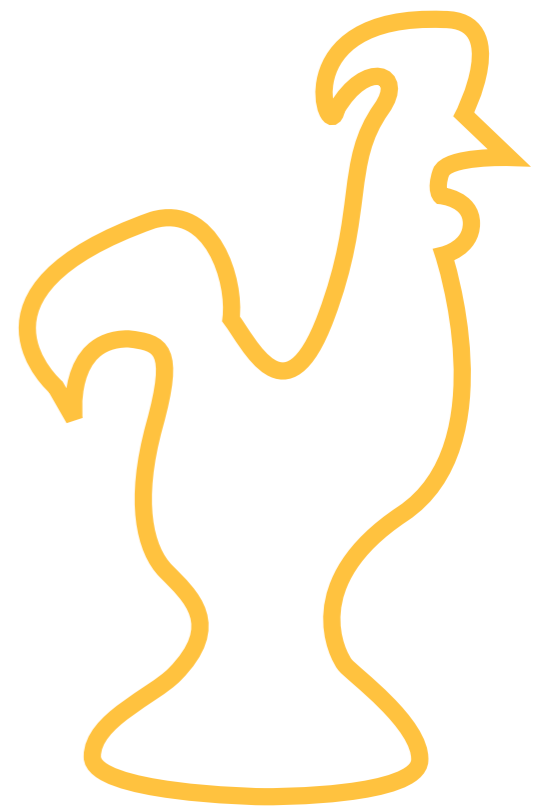
KNOCKOUT STAGE

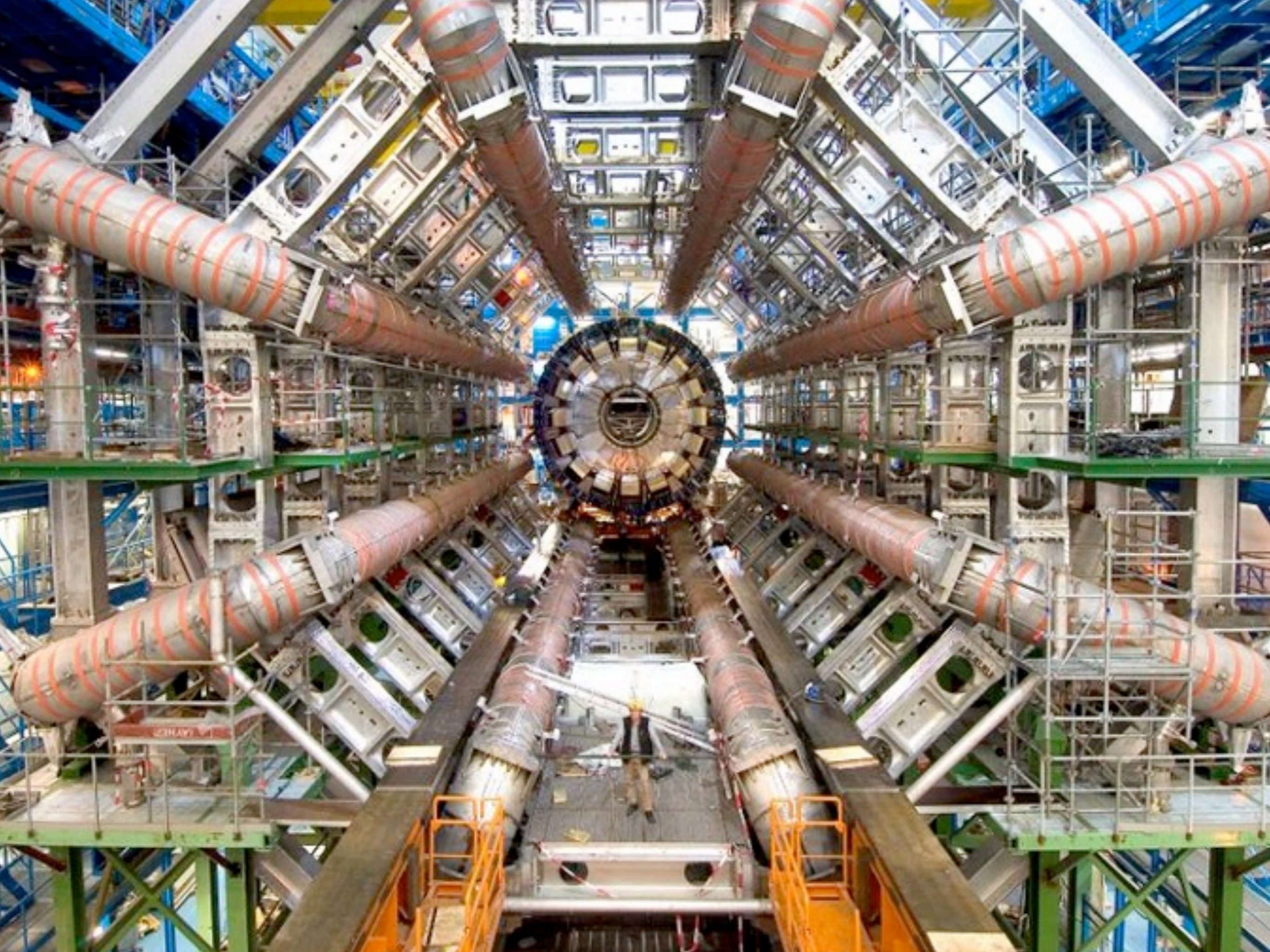
ROUND OF 16

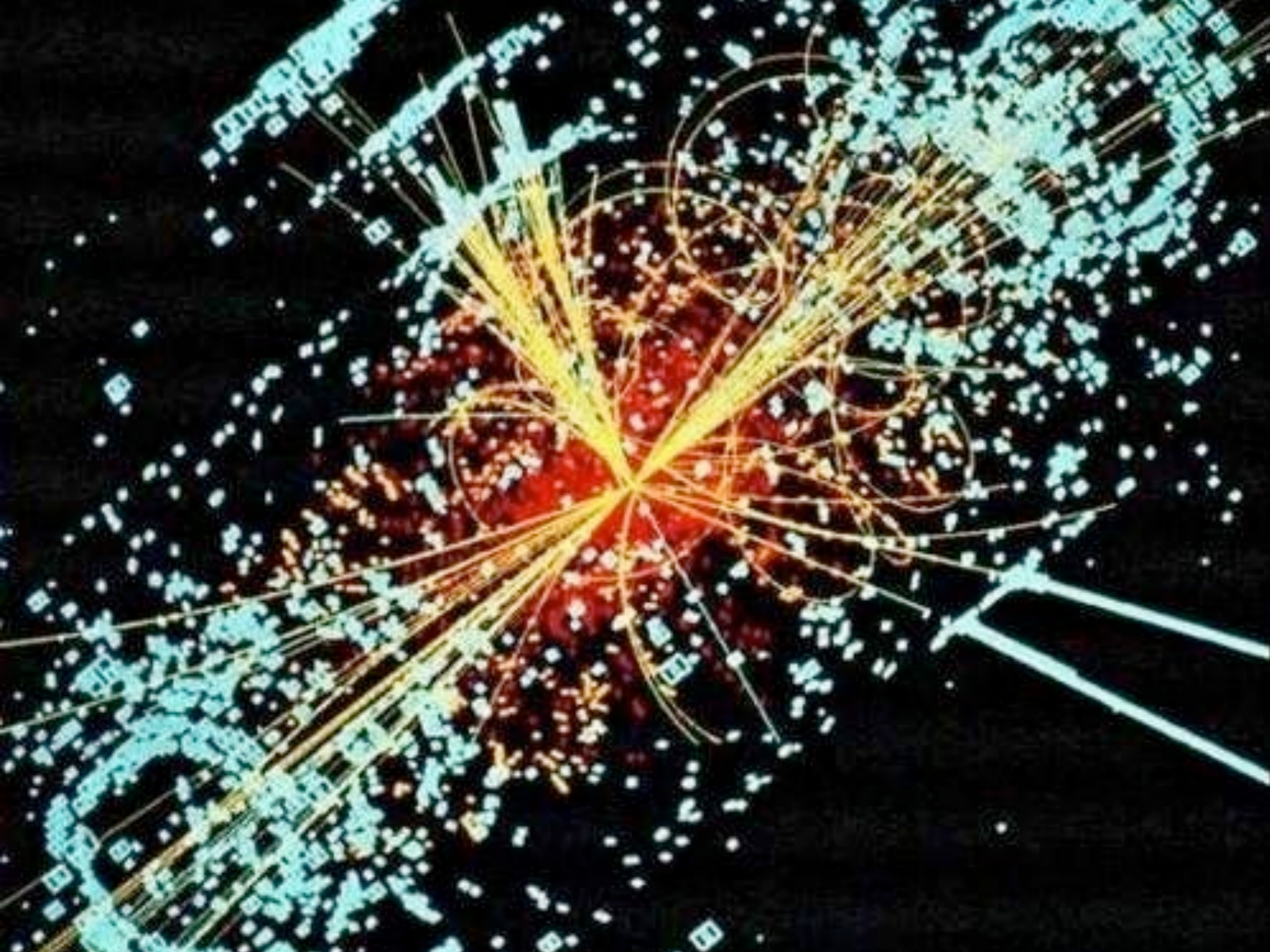


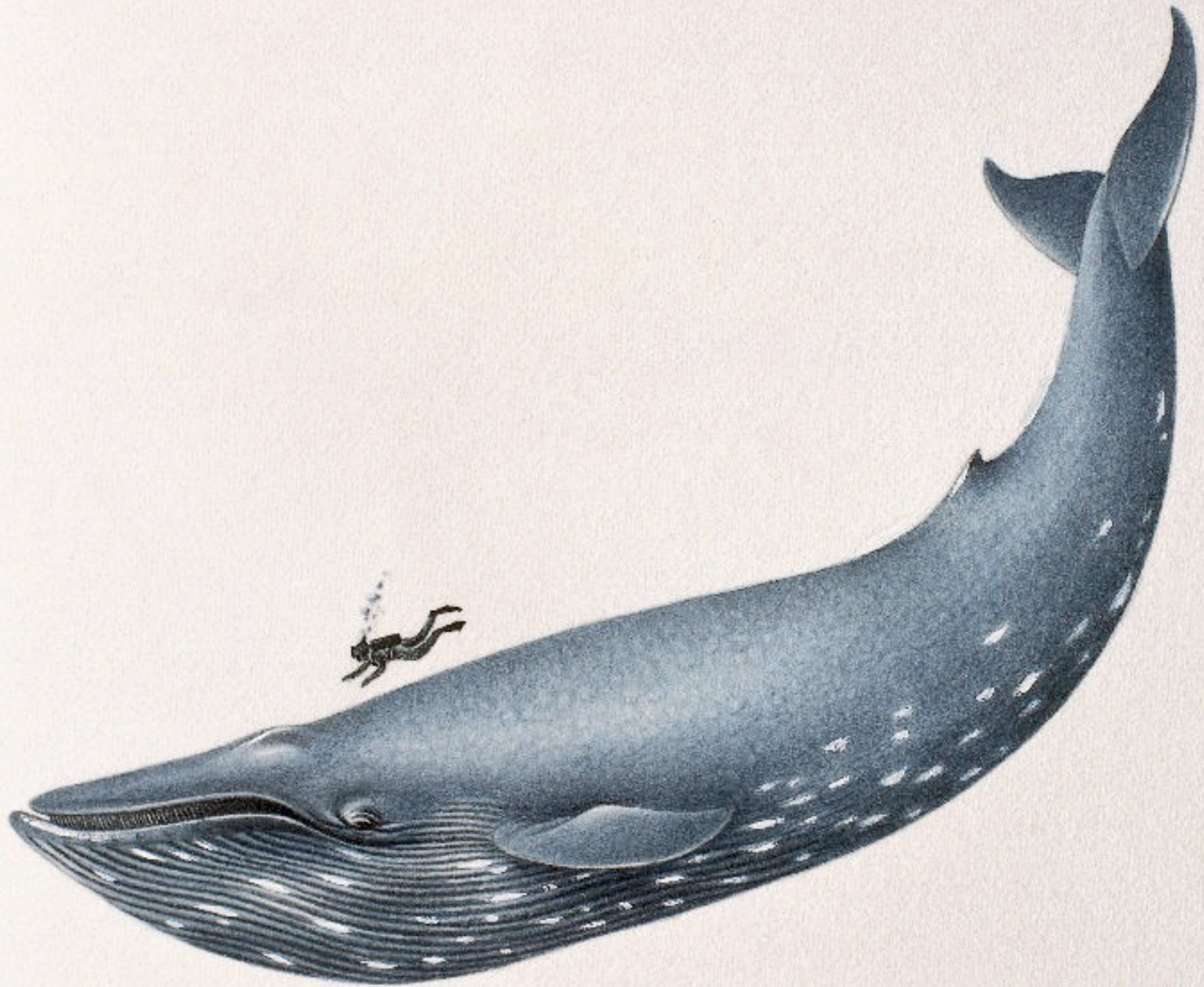












Free Map Tools

[Medical Locks for Tunnels](#)World Wide Supply, Support, Training
Buy, Lease, Rent.[Tourist Map of New York](#)Want to see New York & Save money?
Try New York Pass - Learn more

Ads by Google

Maps you can make use of...

 ShareThis 2.9K

Navigate:

Popular Map Tools

- [ZIP Codes Inside a Radius](#)
- [How Far Can I Travel](#)
- [How Far Is It Between](#)
- [Radius From UK Postcode](#)
- [UK Postcode Map](#)
- [Measure Distance](#)
- [Area Calculator](#)
- [Radius Around Point](#)
- [Distance Between UK Postcodes](#)
- [UK Postcodes Inside Radius](#)
- [How Far Does Santa Have To Travel](#)

Map Resources

- [Download UK Postcodes](#)

About

News

Contact


FAQ's

Tunnel to the Other Side of the Earth

Have you every wondered which part of the other side of the earth is directly below you? Find out using this map tunneling tool.

Map Tunneling Tool


Map 1



38.685509760012,-8.701171875

Nearest Country : Portugal

Map 2



-38.685509760012,171.298828125

Nearest Country : New Zealand

[GPS free track animation](#) Show your GPS tracks (GPX, KML, KMZ) free in our community ! www.gpstrophy.com/en

[Rock Cutting Equipment](#) Roadheader Tunneling Mining Rock & Concrete Cutting Equipment www.alpinecutter.com

[Distance tubes](#) As a manufacturer, we produce almost all possible dimensions. www.seeberger.net

Ads by Google

Ads by Google

[Distance tubes](#)

As a manufacturer, we produce almost all possible dimensions.

www.seeberger.net

[Track & Trace - Gprs/Gps](#)

Track & Trace for



Discovery
Motorhomes New Zealand

Discovery-Motorhomes.co.nz



Compare Prices
Easy Booking

Learn More ▶

Ads by Google

nzherald.co.nz

THURSDAY NOVEMBER 11, 2010
11:04PM NZT

Keywords...

Search

nzherald.co.nz

Web

News Business Sport Tech Entertainment Life & Style Travel Weather Opinion Property Motoring Jobs

Shopping

National World Politics Crime Health Environment Science Cartoons Sideswipe Quizzes The Changing World

One dead in car and school bus crash

One person was killed and two critically injured when a car collided with a school bus near Kumeu, west of Auckland, this afternoon. [More](#)

Legalise cannabis protesters end in smoke at police station

A pro-cannabis protest ended outside Wellington Police Station today with protestors smoking joints on the steps and pushing a smoking shopping trolley inside. [More](#)

Fatal crash driver had learner licence only four months

The inexperience of a teen driver with a new learner's licence was a "massive factor" in a fatal smash, say police. [More](#)



All Blacks: McCaw, Muliana named to equal test record [PHOTOS](#)

Richie McCaw, Mils Muliana and Sonny Bill Williams will all take centre stage against Scotland. [More](#)

7:55 Failed attempts to sell Skyhawks top \$2m

6:46 Xero rises in lacklustre NZ market

6:42 NZ dollar's rise expected to continue

5:37 Liquor law passes first hurdle

5:36 Dangerous prisoner still on run

5:05 Tauranga pilot has lucky escape

5:02 Carter says 'good friend' quip was joke

4:49 Concerns for teen runaway

[See all the latest news »](#)



Ohio tower falls the wrong way

[PHOTOS](#) Victoria's Secret Fashion Show 2010 (24 pics)

[QUIZ](#) November 11: The extremely hard sports quiz

[Movie Review: The Social Network](#)

[PHOTOS](#) Christchurch heritage building demolished (5 pics)

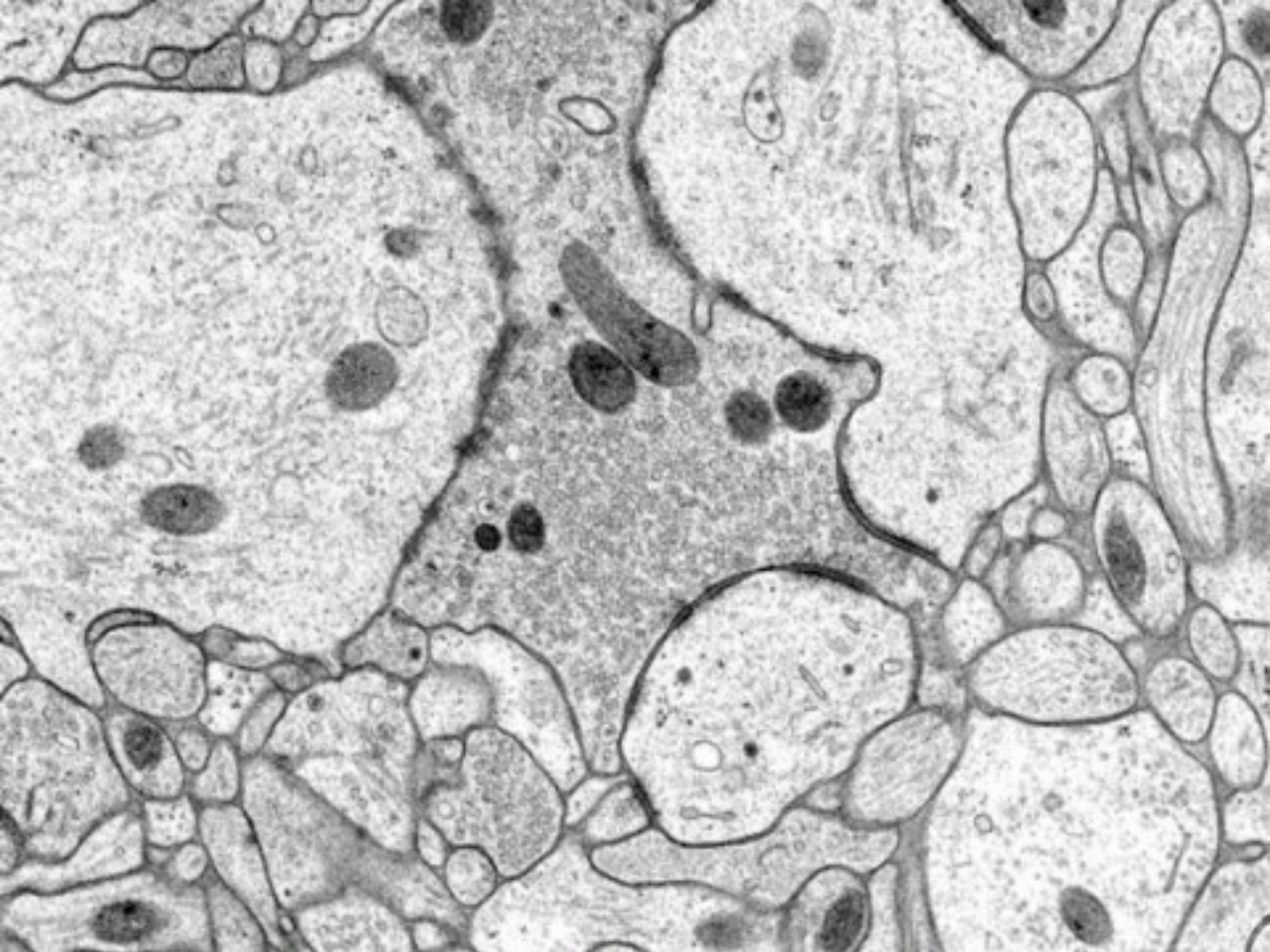


telecom™

Motorola

Terminal — ping — 80x24

```
bl3-76-200:~ brian$ ping www.nzherald.co.nz
PING www.nzherald.co.nz (123.100.98.246): 56 data bytes
64 bytes from 123.100.98.246: icmp_seq=0 ttl=240 time=307.632 ms
64 bytes from 123.100.98.246: icmp_seq=1 ttl=240 time=305.192 ms
64 bytes from 123.100.98.246: icmp_seq=2 ttl=240 time=305.478 ms
64 bytes from 123.100.98.246: icmp_seq=3 ttl=240 time=305.592 ms
64 bytes from 123.100.98.246: icmp_seq=4 ttl=240 time=306.004 ms
64 bytes from 123.100.98.246: icmp_seq=5 ttl=240 time=307.487 ms
64 bytes from 123.100.98.246: icmp_seq=6 ttl=240 time=305.613 ms
64 bytes from 123.100.98.246: icmp_seq=7 ttl=240 time=306.270 ms
64 bytes from 123.100.98.246: icmp_seq=8 ttl=240 time=306.991 ms
64 bytes from 123.100.98.246: icmp_seq=9 ttl=240 time=306.392 ms
64 bytes from 123.100.98.246: icmp_seq=10 ttl=240 time=383.289 ms
64 bytes from 123.100.98.246: icmp_seq=11 ttl=240 time=305.304 ms
64 bytes from 123.100.98.246: icmp_seq=12 ttl=240 time=307.051 ms
64 bytes from 123.100.98.246: icmp_seq=13 ttl=240 time=305.575 ms
64 bytes from 123.100.98.246: icmp_seq=14 ttl=240 time=305.979 ms
^C
--- www.nzherald.co.nz ping statistics ---
16 packets transmitted, 15 packets received, 6.2% packet loss
round-trip min/avg/max/stddev = 305.192/311.323/383.289/19.249 ms
bl3-76-200:~ brian$
```





Thanks



@briansuda

<http://suda.co.uk>

<http://optional.is>

<http://designingwithdata.com>