Zenful Maps with SQL

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Stantec

Get out your smartphone

http://goo.gl/LvNQL

Just go to the website, don't do anything yet

Introductions

- Matthew Basanta
- Paul Vidal

Overview

- Designing for Simplicity
- ArcGIS for Server
- Alternative GIS servers
- Intro to the SQL spatial standards
- A Few Examples

Frustrations

- GIS is data
- A map is part of the answer but it is not the answer
- Maps are charts. Charts are simply ways of displaying data. Maps are just one of those ways.
- We need to step out of our boxes and focus on results

Solutions

- Better, Simpler Design
- Re-focus Products on Users
- User Interface and Experience That Functions as People Really Use Them
- More Accessible Infrastructure

Simple

http://twitter.com/
http://pintrest.com/
http://craigslist.com/
http://wikipedia.org/
http://www.messagesforjapan.com/messages/map/

Data

http://www.digitalpodge.co.uk/2009/

http://www.nytimes.com/interactive/2009/03/10/us/20090310-immigration-explorer.html

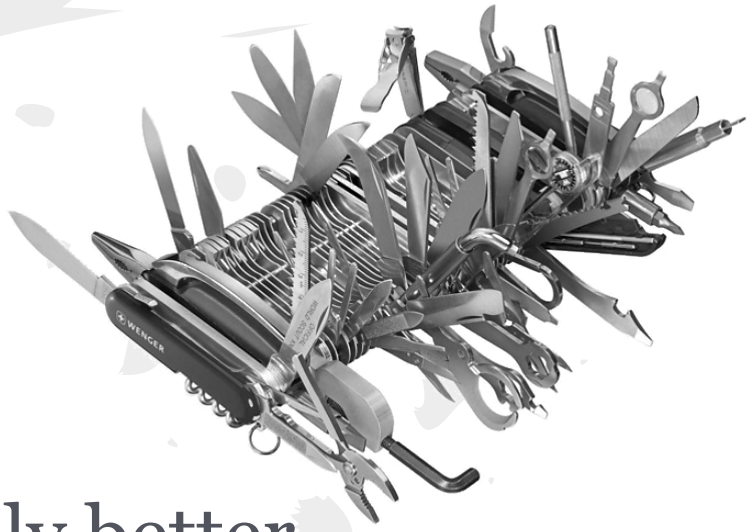
Terms

Usability
User Experience
Choice Architects

Temptation

We must have more..

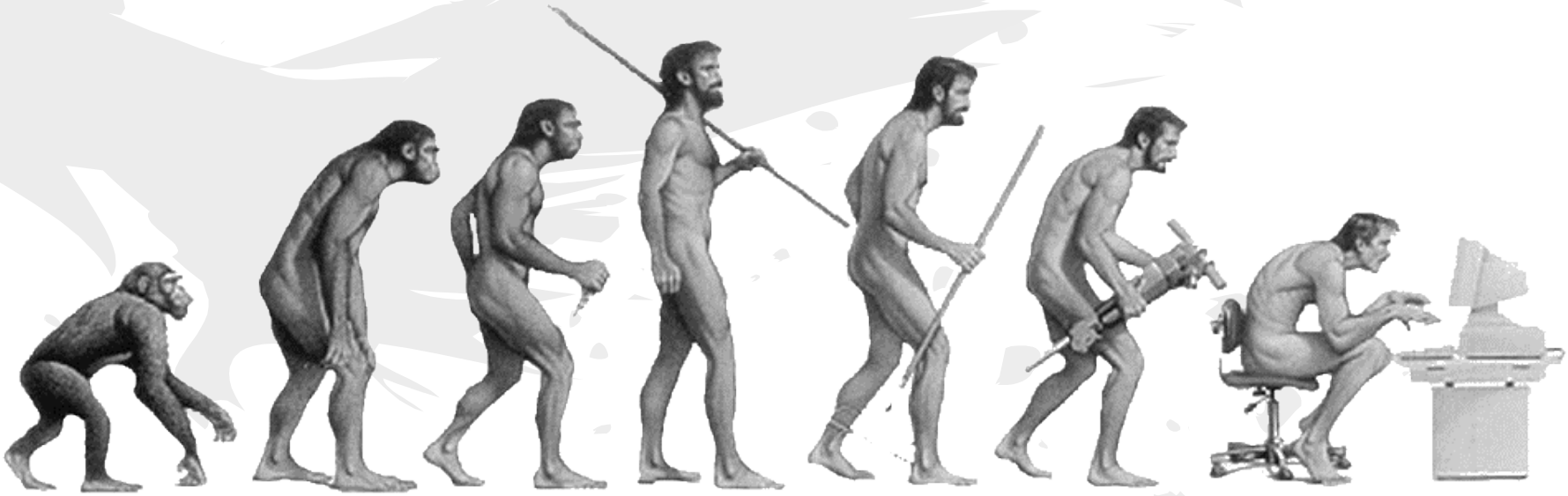
- One more button
- One more layer
- "It would be perfect if.."



Data Collection

- More data isn't necessarily better

Evolution



IMS Sites ⇨ **WebADF** ⇨ **Flex** ⇨ **JavaScript**

(Widgets)

Simplicity

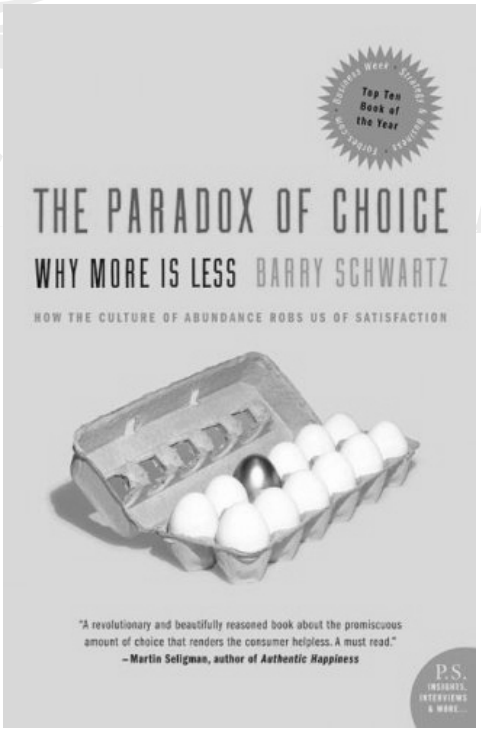
Steve Krug

Don't Make Me Think

Simplicity

Barry Schwartz

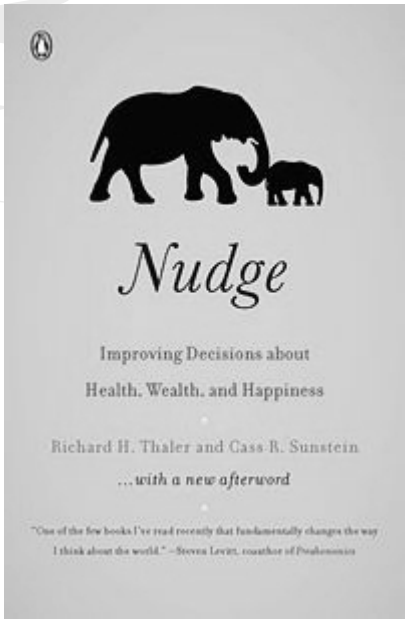
The Paradox of Choice



Simplicity

Cass Sunstein and Richard Thaler

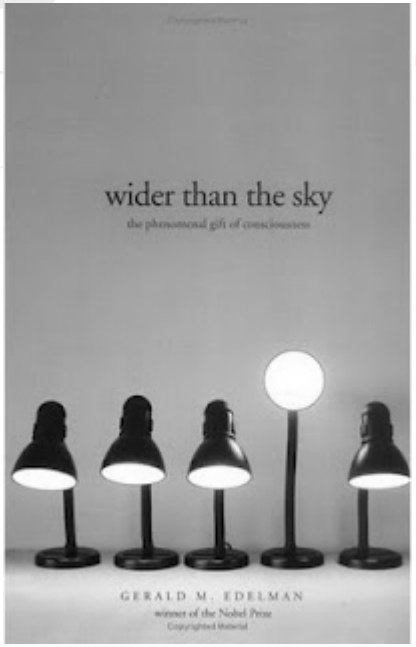
Nudge



Simplicity

Gerald Edelman

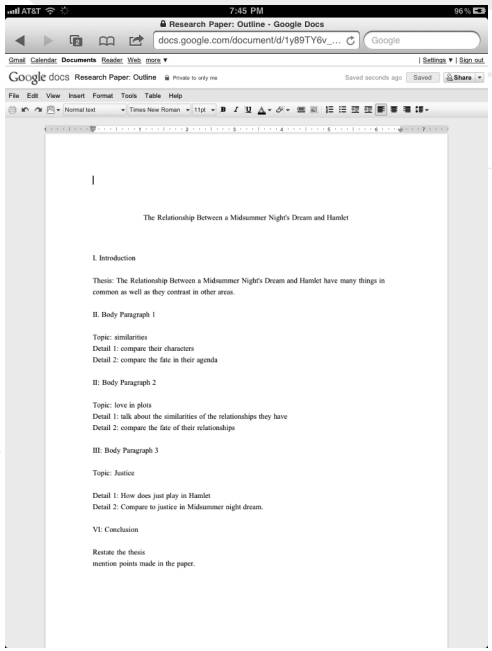
Wider than the Sky

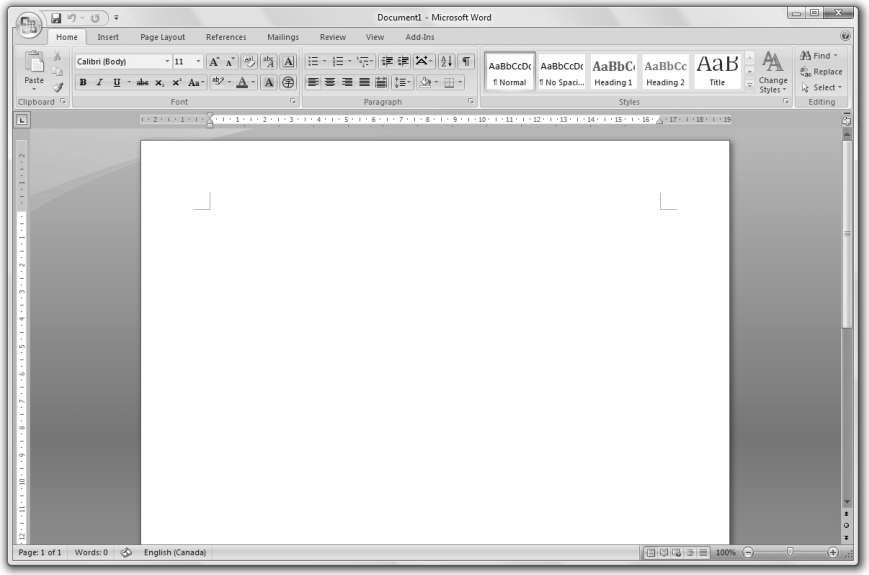


Familiar

Familiar Design is Smart Design

- Imitation is Good for Everyone
  - Also known as, it's ok to steal.. a little bit.





Concepts

Simple
Intuitive
Logical
Practical
Focused
Call to Action
Provides Feedback
Forgiving

Take Home's

1. Focus on Purpose
   a. Navigation
   b. Spatial Relationships
   c. Points of Interest
2. Drop the Legend
3. Show Temporal Data (when possible)

How

Web Application's Goals and Purpose

- This should drive everything

Barriers to Production

- Cost
- Effort
- Time

ArcGIS for Server

- PROs
  - Highly abstracted
  - Ubiquitous
  - Easy to use for basic application
  - Powerful
  - Interface with ArcGIS for desktop
  - Paid support
- CONs
  - Resource intensive
  - Expensive
  - Difficult to customize
  - Slow
  - Use restricted
  - Must use with ArcGIS products

Alternatives

- Database server
  - Microsoft SQL Server (Free -- $$$$)
    - Simple
  - PostgreSQL with PostGIS (Free)
    - Very Powerful
    - Complex
  - MySQL Spatial (Free)
    - Simple
    - Low featured (data collection/display only)
  - Many others

So what can we do?

- Shapes
  - Point
  - LineString
  - Polygon
  - MultiPoint
  - MultiLineString
  - MultiPolygon
  - *GeometryCollection*
- Actions
  - Intersect
  - Union
  - Difference
  - Buffer
  - Distance
  - Count
  - Measure
  - Envelope

How can we do it?

- Requires a little more thinking
- Not as abstracted
  - Stored as binary
  - Manipulated as text
- All the tools are there
  - Just takes a little more thought
- May take more than one function

Well known text

```
POINT(-83.39 38.19)
LINESTRING(-88.63 37.23, -82.41 37.34, -82.18 37.65)
POLYGON((-84.64 38.59, -84.09 38.99, -84.12 39.36, -83.41 38.91,
-84.64 38.59))
MULTIPOINT((-88.63 37.23)(-82.41 37.34))
MULTILINESTRING((-88.63 37.23, -82.41 37.34), (-82.18 37.65,
-83.41 38.91))
MULTIPOLYGON((-84.64 38.59, -84.09 38.99, -84.12 39.36, -83.41
38.91, -84.64 38.59))
```

Identify example

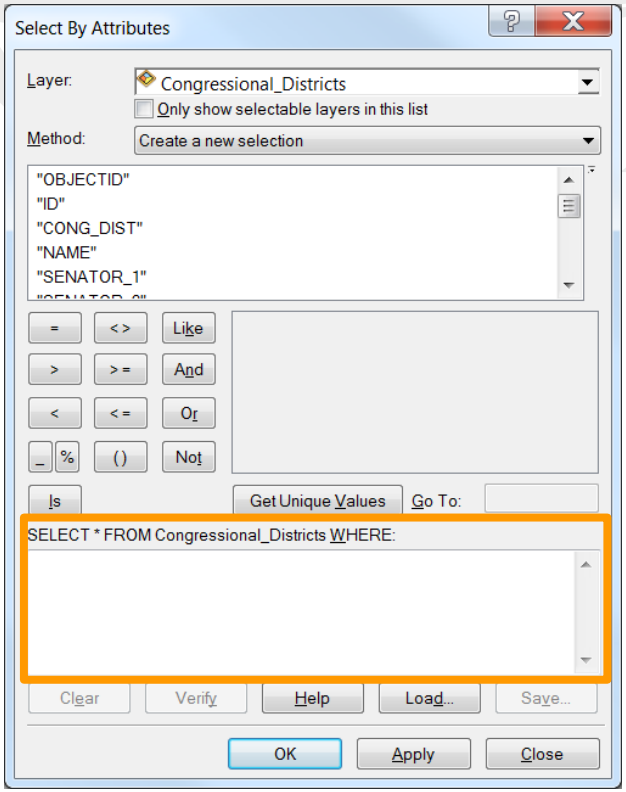
- Create temporary point at selected lat/long
- Measure distance from point to features
- If distance equals zero, that's the one!

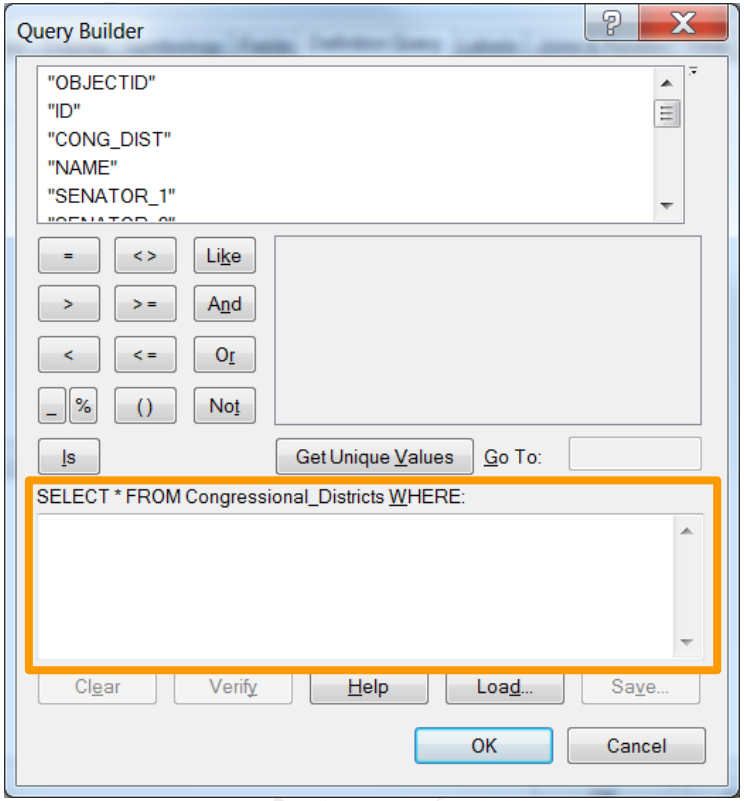
```
CREATE PROCEDURE [dbo].[identify] (
    @lat float,
    @lng float
)
AS
BEGIN
    DECLARE @g GEOGRAPHY;
    SET @g = geography::STGeomFromText('POINT(' + @lng + ' ' + @lat + ')', 4326);

    SELECT * FROM geotest
    WHERE [dbo].[geotest].[geo].STDistance(@g) = 0;
END
```

SQL is not scary

Definition query
Select by attributes

Both use SQL





What does it look like?

Results | Spatial results | Messages

	Shape	GeoText	Major	Acres	Name
1	0xE610000001048401000000...	POLYGON ((-84.412756526842713 37...	East Hickman	5543.53289322	East Hickman PS
2	0xE610000001046D01000000...	POLYGON ((-84.490293190814555 37...	West Hickman	812.449818392	WH5_5
3	Click to select the whole row	POLYGON ((-84.467121666064486 37...	East Hickman	219.431102862	EH3_90
4	0xE610000001[illegible]...	POLYGON ((-84.452666799072176 37...	East Hickman	368.125440917	Armstrong Mill PS
5	0xE61000000104B200000000...	POLYGON ((-84.461360105779022 37...	East Hickman	260.896788721	East Lake PS
6	0xE610000001043201000000...	POLYGON ((-84.520888882223517 37...	Wolf Run	722.980995393	WR7_47
7	0xE610000001045701000000...	POLYGON ((-84.537790180183947 38...	Wolf Run	1313.20367302	WR2_101A
8	0xE610000001048D00000000...	POLYGON ((-84.521303372923285 38...	Wolf Run	281.009139939	WR4_9
9	0xE61000000104D101000000...	POLYGON ((-84.445205356925726 38...	West Hickman	1535.54761717	WH7_35A
10	0xE610000001049801000000...	POLYGON ((-84.462667626328766 37...	West Hickman	1540.42349545	WH6_98
11	0xE61000000104C901000000...	POLYGON ((-84.467947205528617 37...	West Hickman	4535.29164218	WH WWTP
12	0xE610000001045401000000...	POLYGON ((-84.495911883190274 37...	West Hickman	1233.84357661	WH3_55A
13	0xE610000001043D01000000...	POLYGON ((-84.503979588858783 37...	West Hickman	786.835334609	WH2_179
14	0xE6100000010444000000000...	POLYGON ((-84.46894190995954 37....	East Hickman	143.77982115	Hartland 1 PS
15	0xE610000001043B00000000...	POLYGON ((-84.473560048965737 37...	East Hickman	186.68473285	Hartland 3 PS
16	0xE61000000104C500000000...	POLYGON ((-84.511214895173907 38...	Wolf Run	476.075124947	WR4_25
17	0xE61000000104B100000000...	POLYGON ((-84.551339214667678 38...	Wolf Run	764.156149536	Wolf Run PS
18	0xE6100000010442000000000...	POLYGON ((-84.40441054594703 38....	East Hickman	171.609483638	Man O War PS
19	0xE610000001044E00000000...	POLYGON ((-84.456763486843556 38...	Cane Run	267.729832968	Sharon Village ...
20	0xE6100000010402020000000...	POLYGON ((-84.387020034715533 38...	North Elkhorn	4834.55478451	North Elkhorn PS

Examples

- Microsoft SQL Server 2010 Express (free)
  - Open source alternative -- PostgreSQL/PostGIS
- Google Maps Javascript API
  - Open source alternative -- Open Street Maps
- Microsoft IIS/.NET (server)
  - Open source alternative -- Apache/PHP

Data display/Identification

Kentucky Counties

Draw shapes

View in ArcMap

Who didn't follow directions?

Let's go to this website

http://goo.gl/LvNQL

- Click or tap the screen to add points
- Add two or three points around Kentucky

View our crowdsourced data

A working example

Wrapping up

- We hope this has created interest in alternatives for web based mapping applications
- Any Questions?