

THE AWAKENING



By HY MAYER

Look forward, women, always; utterly cast away  
The memory of hate and struggle and bitterness;  
Bonds may endure for a night, but freedom comes with the day,  
And the free must remember nothing less.

Forget the strife; remember those who strove—  
The first defeated women, gallant and apart,  
Who gave us hope, as a mother gives us love,  
Forget them not, and this remember, too:

How at the later call to come forth and unite,  
Women untaught, uncounselled, alone and apart,  
Rank upon rank came forth in unguessed might,  
Each one answering the call of her own wise heart

They came from toil and want, from leisure and ease,  
Those who knew only life, and learned women of fame,  
Girls and the mothers of girls, and the mothers of those,  
No one knew whence or how, but they came, they came.

The faces of some were stern, and some were gay,  
And some were pale with the terror of unreal dangers;  
But their hearts knew this: that hereafter come what may,  
Women to women would never again be strangers.

Alice Duer Miller.

‘Published in *Puck Magazine* in 1915 and illustrated by German-born artist Henry Mayer, the map depicts women with faces turned to the light that Lady Liberty is bringing east. Her flowing robes are emblazoned with the words, “VOTES FOR WOMEN.”’

Geography 360

November 7, 2016

## GIS data: manipulation through selection

### 1. *Questions and Announcements*

- Quiz I grades released. Visit lab section for more!

### 2. *Introduction to the [shifting roles of] Desktop GIS*

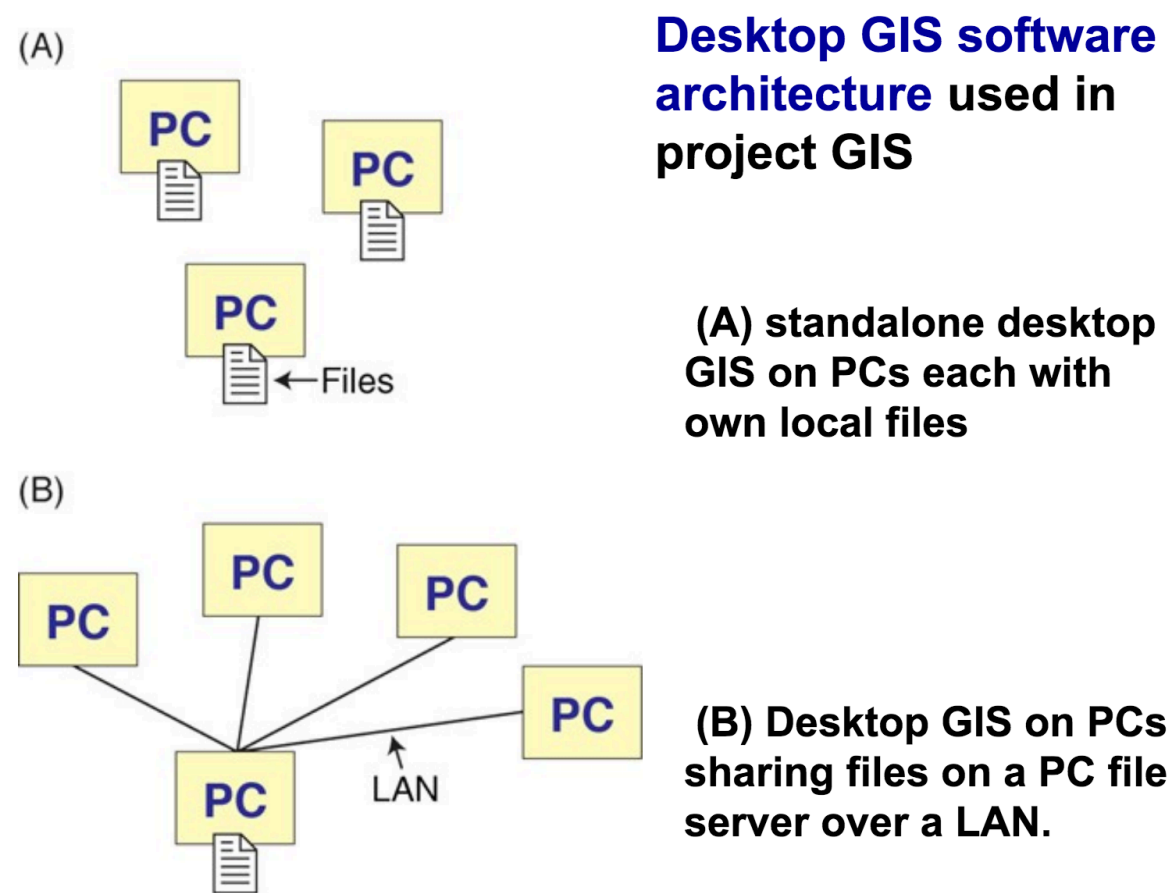
### 3. *GIS data and queries*

- SQL
- Attribute queries
- Spatial queries

# ArcGIS for Desktop and ArcGIS Online

- ArcGIS for Desktop == ArcMap **or** ArcGIS Pro
  - These terms and the ecosystems *will change*.

“Desktop GIS” used to be more “standalone” (Left)...  
but now it’s increasingly a part of a larger “Internet GIS” (Right):



# Working with data in a database: Query & Retrieval

- “Retrieval”: the ability of the DBMS or GIS to get back data that were previously stored, especially to retrieve a subset of data based that fit particular characteristics.
- “Query”: an operation that you perform to guide the retrieval – the parameters of the retrieval.
- One of the key specializations of [a spatial database that underlies] GIS is its ability to query and retrieve based on both **attribute** and **spatial** characteristics.



# SQL

- SQL = Structured Query Language
  - (technically 'S-Q-L', but many say 'sequel')
- SQL is a formal/mathematical language for manipulating relational databases.
  - Despite its name, **SQL does more than just 'get' things. It can change them, too.**
  - Side note: Some SQL are complete programming languages ( <http://stackoverflow.com/questions/900055/is-sql-or-even-tsql-turing-complete> )
- ArcGIS uses SQL!

# A basic SQL query: *SELECT*

Involves applying different operators to the fields/tables of a database.

Example of basic syntax:

*SELECT <some records> FROM <these tables> WHERE  
<this criterion is met>*

For example:

*SELECT <Class, Instructor> FROM <Geography Classes> WHERE  
<Instructor = "Bergmann">*

So, this SQL statement:

```
SELECT <Class, Instructor> FROM <Geography Classes>  
WHERE <Instructor = "Bergmann">
```

might return this result:

### **Geography Classes**

Class	Instructor
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<b>Geog 123</b>	<b>Sparke</b>
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Geog 271	Jarosz
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Geog 360	Bergmann
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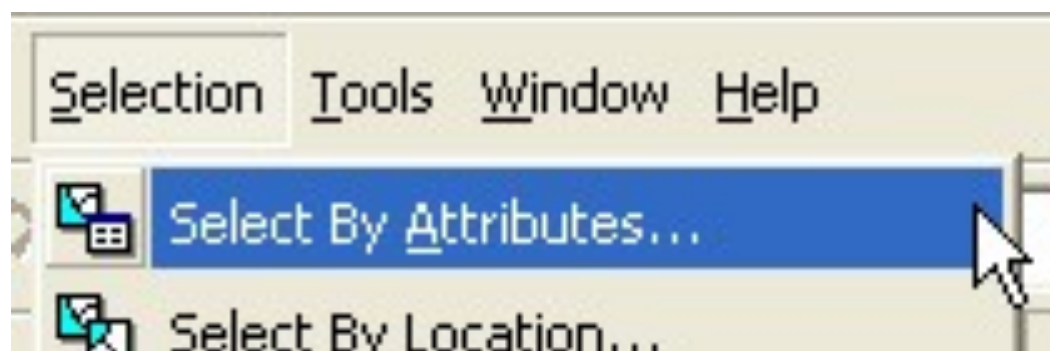
Geog 430	Lawson
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Class	Instructor
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<b>Geog 360</b>	<b>Bergmann</b>
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# Examples of SQL Queries in ArcGIS

Attributes of World								
	FID	Shape *	ID	NAME	REGION	TOUR_A03	TOUR_A95	TOUR
	0	Polygon	4	Afghanistan	Asia + Pacific	-9999	-9999	
	1	Polygon	8	Albania	Europe	-9999	40	
	2	Polygon	12	Algeria	Africa	1166	520	
	3	Polygon	16	American Samoa	Asia + Pacific	-9999	34	
	4	Polygon	20	Andorra	Europe	3138	-9999	
	5	Polygon	24	Angola	Africa	107	9	
	6	Polygon	28	Anguilla	Latin America + Caribbean	-9999	-9999	
	7	Polygon	32	Antarctic	Polar	-9999	-9999	
	8	Polygon	36	Antigua and Barbuda	Latin America + Caribbean	-9999	220	
	9	Polygon	40	Argentina	Latin America + Caribbean	3374	2289	
	10	Polygon	44	Armenia	Europe	206	12	
	11	Polygon	48	Aruba	Latin America + Caribbean	642	619	
	12	Polygon	52	Australia	Asia + Pacific	4354	3726	
	13	Polygon	56	Austria	Europe	19078	17173	
	14	Polygon	60	Azerbaijan	Europe	-9999	93	
	15	Polygon	64	Bahamas	Latin America + Caribbean	1510	1598	
	16	Polygon	68	Bahrain	West Asia	2955	1396	
	17	Polygon	76	Bangladesh	Asia + Pacific	-9999	156	



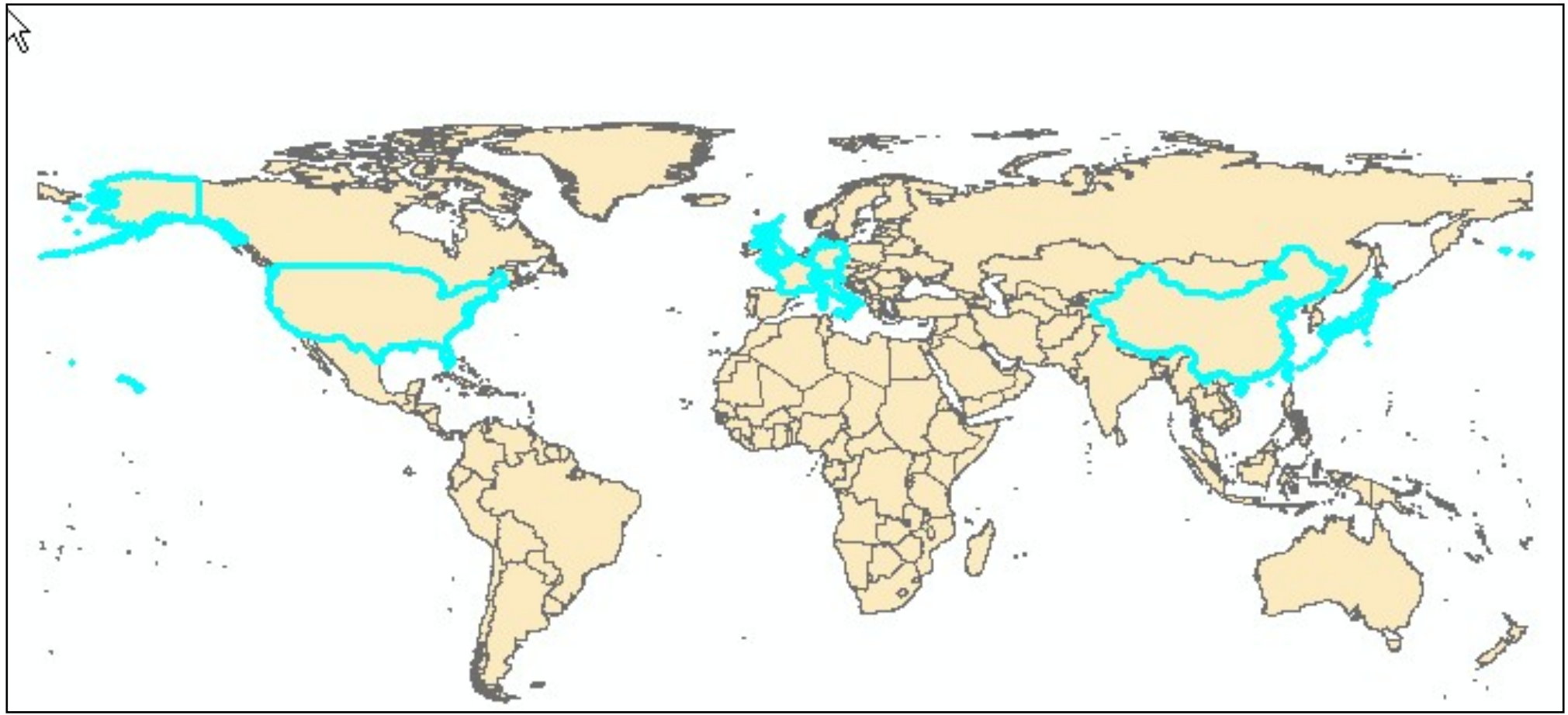




<input data-bbox="485 1036 541 1079" type="button" value="_"/>	<input data-bbox="548 1036 604 1079" type="button" value="%"/>	<input data-bbox="667 1036 724 1079" type="button" value="()"/>	<input data-bbox="808 1036 865 1079" type="button" value="Not"/>	<input data-bbox="949 987 1054 1031" type="text" value="'Polar'"/>
				<input data-bbox="949 1036 1138 1079" type="text" value="'West Asia'"/>
<input data-bbox="520 1149 562 1193" type="button" value="Is"/>		<input data-bbox="961 1149 1285 1193" type="button" value="Get Unique Values"/>		Go To: <input data-bbox="1486 1136 1732 1201" type="text"/>
<p>SELECT * FROM World WHERE:</p>				
<div><input asia\''="" data-bbox="493 1299 913 1347" type="text" value='"REGION" = \' west=""/></div>				

```
SELECT * FROM World WHERE:
```

```
"GDP_2003" > 1000000
```



# Queries and practicality

- Note: The results of selections in ArcGIS are “stable” – records remain selected UNTIL you un-select them!
- Queries are a common way to retrieve a smaller subset of information to work with (consider exporting the selection to new file!)
  - What are reasons this might be advantageous?

# Only using part of the data:

## Database vs. Cartographic Approaches

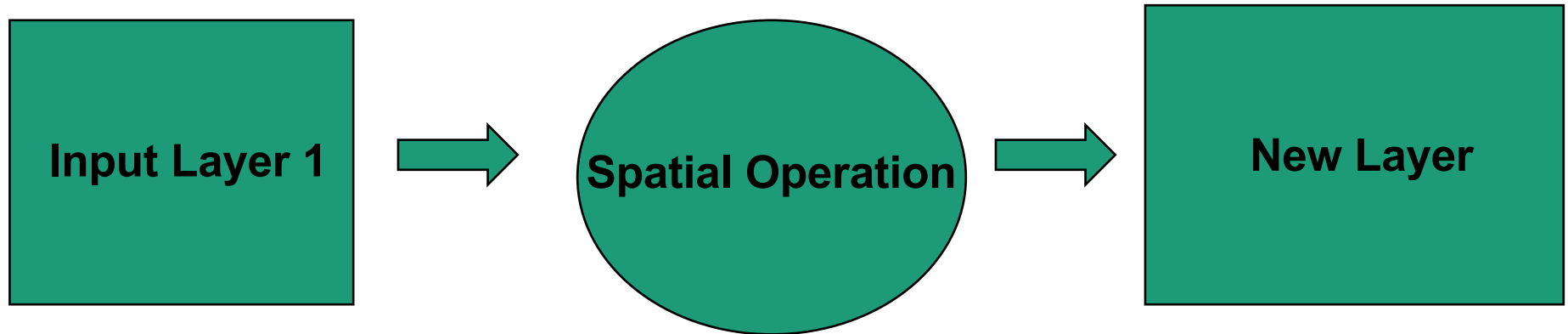
- We've been making cartographic masks to [de]emphasize some parts of the data.
- We've also been using 'filters' to only show some parts of the data.
- Queries are more like filters. They return a 'subset' of the data in a 'selection'.

# Spatial queries

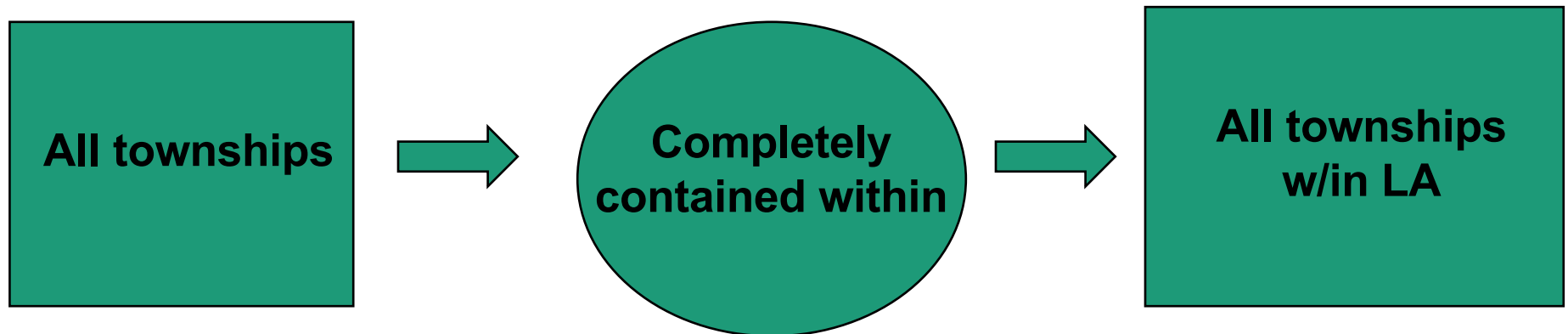
- Select/retrieve records or objects based upon spatial/geographic characteristics
- Spatial queries produce new sets of geographical features which might then be used in building new GIS layers.
- Many forms of analysis rely on or start with spatial query.



# Visually ‘modeling’ a spatial query:



“All townships within the state of Louisiana”



# More examples of spatial queries ...by location!

- Adjacency
  - retrieves all records that share a boundary.
- Containment
  - All features in one layer that are completely within the features of another layer.
- Proximity
  - All features within a certain distance of features of another layer. [Compare with buffering, later!]
- Intersect
  - All features that intersect the features of another layer.

# In ArcGIS

