GIS Mapping for Linguistic Research

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Welcome to the course!

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   Uses GIS in PD research

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   PhD student, University of Washington
   Graduate of UK MALT program
   Uses GIS in PD research
Who are you?

You know the drill...

1. Name
2. University
3. Level (grad, undergrad, prof, etc.)
4. Why are you here (this class)?
5. Have you ever been to Kentucky before?
Course Description

This course will introduce students to maps, mapping, and mapping language data using Geographic Information Systems (GIS) tools. Students will be expected to apply the methods introduced in the course to linguistic data. While emphasis will be placed on sociolinguistic uses of such tools, the methods presented could certainly be applied more broadly. No previous knowledge of GIS technologies required, but having command of basic desktop computer skills and an openness to acquire new skills for research in a computational environment will be beneficial.

- If you have a laptop, please bring it to class.
- If you don’t have a laptop, no worries! We’ll figure it out!
Here are some important items to note about the course:

1. We will use the Canvas site, so please sign on if you haven’t already. See https://canvas.instructure.com/login/canvas for more info (and your email)

2. On Canvas, you will find
   - Syllabus
   - Readings
   - Assignments
   - Maybe more!

3. The setup for actual classes is a lecture day, followed by a hands-on day. See schedule in syllabus on Canvas for more information.
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Readings

There are lots of things to read for this class...
But, I recognize that you have a lot going on while you are here
Therefore, I will not require that you read these for class
I just hope you will find them useful in the future!
The full reference list for the class is at the bottom of the syllabus PDF

Also, this is not actually a lot of things to read...
I have so many more resources I can share!
Please come see me if you have specific questions/needs
Assignments

*Weekly discussion board posts (40%):* After each Friday session, and before each Tuesday session, you will complete a discussion board post and response in the “Discussions” section of the Canvas site. See the individual forum for each week to submit your own post and your response to a classmate.

*In-class group work (30%):* Each Tuesday session (except the last one) will include a hands-on activity using GIS tools. You will work with a partner (or two) and submit a group project by the end of the session.

*Final presentations (30%):* On the last day of class, you will present a brief (3-5 minute) sketch of how you might use GIS tools in your own research projects. This does not need to be a major, formal presentation, but I expect you to put some notes together on what you have learned, how it applies to your research, and how you will employ it.
One final thing...

Pass/fail or letter grade?

Grades = A (100%-90%), B (89%-80%), C (79%-70%), D (69%-60%), F (below 60%)
Let me know by the end of class today.
You can write it on a slip of paper, email me, or whisper it to me!

I have to know for your Canvas grade = institute grade = transfer credit
And I don’t know what the difference is between these two types for your individual institutions
Talk to the institute folks about how to get credit...
History of maps, mapping, and linguistics

GIS Mapping for Linguistic Research
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What is a map?

Definitions:
1. Google - a diagrammatic representation of an area of land or sea showing physical features, cities, roads, etc.
2. Wikipedia - a symbolic depiction emphasizing relationships between elements of some space, such as objects, regions, or themes.
3. Merriam-Webster - a representation usually on a flat surface of the whole or a part of an area
4. GIS Lounge - the primary tools by which spatial relationships are visualized (https://www.gislounge.com/whats-in-a-map/)
What is a map?

As you can see, there are many ways of thinking of maps
   These all focus on geographic/spatial relationships (as we will)
   You can map stars, or electron densities, or really anything…it does not need to
   have geography in its formulation

Perhaps, then, the best thing is to say is that a map is some sort of visual
representation of whatever we want to visualize (e.g., our data)
   What kinds of maps do you encounter in your day-to-day lives?
   What are these maps visual representations of?
What is a map?

What is a Customer Journey Map?
A visualization of a customers' objectives, needs, feelings and barriers throughout the path-to-purchase for a product, service or brand.
It’s all about perspective...
What is mapping?

Crampton’s definition:
“a human activity that seeks to make sense of the geographic world, it is a way in which we ‘find our way in the world’” (p. 12, based on Crampton 2003)
He calls this “deliberately loose”
For him, mapping is a field dealing with power/knowledge relations

We’ll come back to this point, but this is why Crampton is interested in a critical approach – maps/mapping are not neutral!
Why mapping?

A picture’s worth a thousand words.

Etymology of county names

Good data = good image (https://en.wikipedia.org/wiki/List_of_counties_in_Arizona)
Why mapping?

Mapping = knowledge = power

For a long time, the power was held by those with credentials only

Today, mapping is so prevalent among everyday users that the power and therefore the knowledge has shifted
Discussion time!

You may have not had a chance to read Crampton yet (but please do— it’s fascinating!)

But he says that while we might like to think of mapping as a neutral activity (and, GIS as a neutral tool for creating maps), ultimately “mapping is itself a political act” (p. 9)

Talk to a partner, then we’ll discuss together
1. What do you think he means by this statement?
2. Give an example of a way in which a map can be seen as political.
Why mapping?

Maps seem to work – but often to negative social and political effects (colonialism, racist mapping, etc.)

- Need to examine and challenge the rationale behind mapping
- Maps produce knowledge in specific ways, with specific categories, which in turn have certain effects = categorization = othering

So in looking at mapping critically, we must examine how maps and GIS are situated in a specific time and place, what knowledges they produce, and what effects come of it

Redlining in Louisville, KY (Pink = least desirable)
Why mapping?
Why mapping?

“Not only is it easy to lie with maps, it’s essential. To portray meaningful relationships...a map must distort reality.” (Monmonier 1991: 1)
Mapping decisions

The other side to the “why mapping?” question is about you – do you need maps?

The research questions have to drive the answer here

What is your question? And will answers be found in maps?

Ex. Is Louisville Southern?

Maps as visualization
Maps as analysis
Mapping decisions

When we do decide that maps and mapping are the right ways to go about our research, we have some decisions to make.

These decisions are also based on your research questions. And we’ll go into more detail about these decisions later, when we play around with GIS.

But we can even see it when we think about maps in our day-to-day lives.

What level of detail do you need to do what you want to do? What information must be visible to accomplish your goals?
Mapping decisions
Mapping decisions
Mapping decisions
Humorous maps
Humorous maps
Humorous maps
Briefly...

Before we get too far into the course, there is one question I want to make sure we are on the same page about

What is GIS?
What is GIS?

According to ESRI, the company that makes ArcGIS (the program I use)

“A geographic information system (GIS) lets us visualize, question, analyze, interpret, and understand data to reveal relationships, patterns, and trends”

Integrates hardware, software, and data

Can connect and layer various levels of what the “real world” looks like (see example)

Also see [https://www.google.com/maps](https://www.google.com/maps)

There are open-source options as well (e.g., OpenStreet Maps, QGIS)
The history of GIS is tied up with cartography and geography (not the same thing). Geographers = concerned with the social/political/etc. ramifications of space = social science and humanities. Cartography = (primarily) unconcerned with those things, just concerned with making pretty maps = GIScience.

But map making (read “cartography”) used to be more of an art... Post WWI, attempts to make mapping more science-y occurred. At the same time, there were attempts to make it non-political (read “objective”).
GIS History

GIS technology surfaced in the 1960s/1970s
  But the techniques that are behind GIS have roots in the early 19th century
In fact, stats and probability were developed alongside these mapping techniques, which helped in slowly creating GIScience
  Image = Cholera death map (John Snow, London, 1854)

First commercial GIS software in 1980s
  Majorly taken up by government agencies
  Later become accessible to public
GIS History

If you’re interested in more of the history, read this: http://www.smithsonianmag.com/history/unlikely-history-origins-modern-maps-180951617/

And in case my very brief intro to GIS hasn’t been fulfilling enough, let’s watch this short video: https://www.youtube.com/watch?v=UUq6iJvD_1o
Maps and Linguistics

We know people fancy themselves lay linguists!

I think, if there is anything people love to talk about more than language, it’s maps!

Take, for example, Josh Katz’s small piece in Business Insider (2013)

Two days after the story was posted, it had been directly shared on Facebook, LinkedIn, Twitter, and Google+ more than 1 million times

This number would be greatly increased if it also included the number of times people reposted after having seen the original share


Now it’s a coffee table book!
The famous coke, soda, pop debate!

What is your generic term for a sweetened carbonated beverage?

- soda
- pop
- coke
-arth drink
Maps and Linguistics

The Business Insider story was actually kind of dull...

So why did so many people share it?

In our globalized, technological world, we are inundated with both, for example, in the form of GPS- and Wi-Fi-enabled smartphones, which allow people to not only get where they are going (maps) but to tell everyone when they have arrived (language).

Furthermore, regional dialect variation is a popular topic of interest for people

  Question – who has ever had a regional variant pointed out to them?
  Another – who has ever been asked, “Ooh, where are you from?”
American linguists, too, enjoy maps!

As much of my work has been in dialects, I will start with some discussion of mapping in that tradition.

This is, of course, not to say mapping isn’t used/useful in other traditions...it’s just what I know best!

And as you’ll see on the schedule, what I know best about GIS is in PD, so we have an entire week on that topic (sorry if you are enrolled in Dennis’ class...)

So we’ll examine what early dialectologists did with maps, and we’ll try to see how things have moved forward!
Early dialect collections

A lot of early dialect work seemed preoccupied with maintaining a standard or cataloguing archaisms

Pickering (1816): In comparing British English to American “…it cannot be denied, that we have in several instances deviated from the standard of the language, as spoken and written at the present day.”

Hunter (1829): “Peculiarities in local circumstances…have occasioned the preservation of words in some narrow district, and in that alone”

This early work was less than scientific, mostly a collection of interesting phrases
Dialect study

Dialectology/dialect geography developed as a set of methods for gathering systematic observations related to dialect variation.

Hallmarks of traditional dialect work include:

1. A goal of further understanding language change (which comes from the notion that there is a relationship between a language and its dialects)
2. A focus on individual linguistic items (e.g., words, phonemes, syntactic structures)
3. An attempt to define dialect areas (already the spatial dimension was included)

(See Francis 1983: 150-151)
Traditional dialectology

Surveyed whole countries
  Aimed to gather data on the oldest forms they could find
  Using the present to investigate the past

Targeted speakers they though would have preserved these older forms
  Generally (but not always) non-mobile people
  Generally (but not always) older people
  Generally (but not always) rural residents
  Generally (but not always) males

I sometimes call them “WORMs” because they were also usually white...
Dialect surveys

In line with other developments in science and research, approaches to studying dialects developed in the late 1800s:

- Dialect surveys became the main way of gathering dialect data

Various approaches to gather dialect data:

- ‘Translations’
- Questionnaires (filled out and returned or interview-driven)
- Combined methods
Dialect surveys

Georg Wenker (1876) [Germany]
  Lists of sentences sent to 50,000 schoolmasters (45,000 completed responses gathered)

Jules Gilliéron (1896) [France]
  Core questionnaire including 1,500 items
  Edmond Edmond administered the questionnaire over four years (1896-1900), cycling to 639 sites

Karl Jaberg and Jakob Jud (1910) [Italy and S. Switzerland]
  Similar methodology to Gilliéron’s study
Dialect surveys

Linguistic Atlas of the United States and Canada (LAUSC) (1929)
  Huge survey, initially under the direction of Hans Kurath
  First sub-survey to start was the Linguistic Atlas of New England (LANE)
  More information here: http://www.lap.uga.edu/

  http://dare.irl.pubfactory.com/

  http://www.atlas.mouton-content.com/
So what’s on a dialect map?
Distribution of Dialect Forms

**Isoglosses:** “When the distribution shows a fairly clear-cut demarcation, a line indicating the boundaries of different variants...may be drawn” (Wolfram and Shilling 2016: 132)

- Lines suggest discrete entities – one feature exists on one side of the line and not on the other
- But we find pockets of usage as well as transitional zones
- So isoglosses represent the ideal, not necessarily the real
- Isoglosses often form **bundles**, which are used to determine the overall dialect boundaries
  
  *Works for lexical and phonological variables*
From Dialectology to Sociolinguistics

Early studies in dialectology were (largely) separate from efforts in linguistics to account for the interrelatedness of language and society.

Since the 1960s, “research on dialect in the United States started focusing more on the social and ethnic variation in American English than on regional variation” (Wolfram and Schilling-Estes, 2006: 25)

Departure from the small-sample, multiple-location surveys

The focus was now on language variation and change in individual speech communities (e.g. Labov 1963; Labov 1966; Trudgill 1974; Macaulay 1977; Milroy 1987; Eckert 1989; Watt and Milroy 1999; Llamas 2007)
Bringing it all together

This shift in focus in linguistics is *exactly* like the call for critique in Crampton. Critique is not a hunt for fault. Crampton says it is “an examination of the assumptions of a field of knowledge. Its purpose is to understand and suggest alternatives to the categories of knowledge that we use” (13).

Assumptions *shape* our knowledge.

So when we, as linguists, choose to focus on individual speech communities, we are challenging the assumptions of those dialectologists who sought to provide large-scale pictures of wide variation. These could be theoretical or practical critiques.
Questioning assumptions

The outer boundary of the South is defined by glide deletion of /ay/ before voiced consonants and finally. Speakers shown as red symbols have glide deletion before voiced obstruents (wide, size, five, etc.) and finally (high, my, etc.). Speakers shown with purple symbols (Inland South and Texas South) have glide deletion before voiceless consonants as well. The South is also marked by various stages of the Southern Shift, and by the Back Upglide Shift in law, caught, water, etc.
That’s all for today!

Some reminders

Do your discussion board assignment in Canvas before next class

We’ll do our first hands-on activity on Tuesday

This will be work with partners, so if you don’t have a laptop, don’t worry

There will be some components that you turn in physically and others that will be uploaded to Canvas

If you are a laptop bringer, please make sure you have a Google account (we’ll be playing with Google My Maps, if you want to goof around with it over the weekend)

Enjoy the weekend! Go see some cool Kentucky stuff!