Personalized ontologies of location

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Re-re-iteration of the concept: the dwindling of devices that don't have geolocation and how the numbers aren't very useful to me.

Agenda:
Briefly summarize last time
Basis for "personalized location" in geography and philosophy
Challenges in practical implementation

Levels of meaning

Personal ontology — Personal — At home

Geographic ontology — In Berkeley, in California, near San Francisco

Civic address — Universal — 3141 College Ave, Berkeley

Latitude/longitude — (37.852,-122.252)

As before, we talked about these different levels of meaning (meaning for people, if not for machines). I think the essential distinction is that some of these are “universal” -- the categories can be applied no matter who the subject is -- but that top level is “personal” -- categories vary from person to person even in the same place.

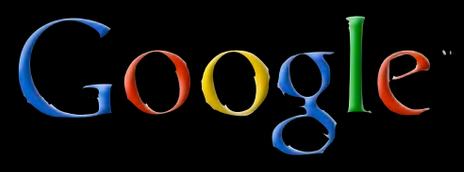
Universal ontology of location

… a solved problem?

- Geographic ontologies

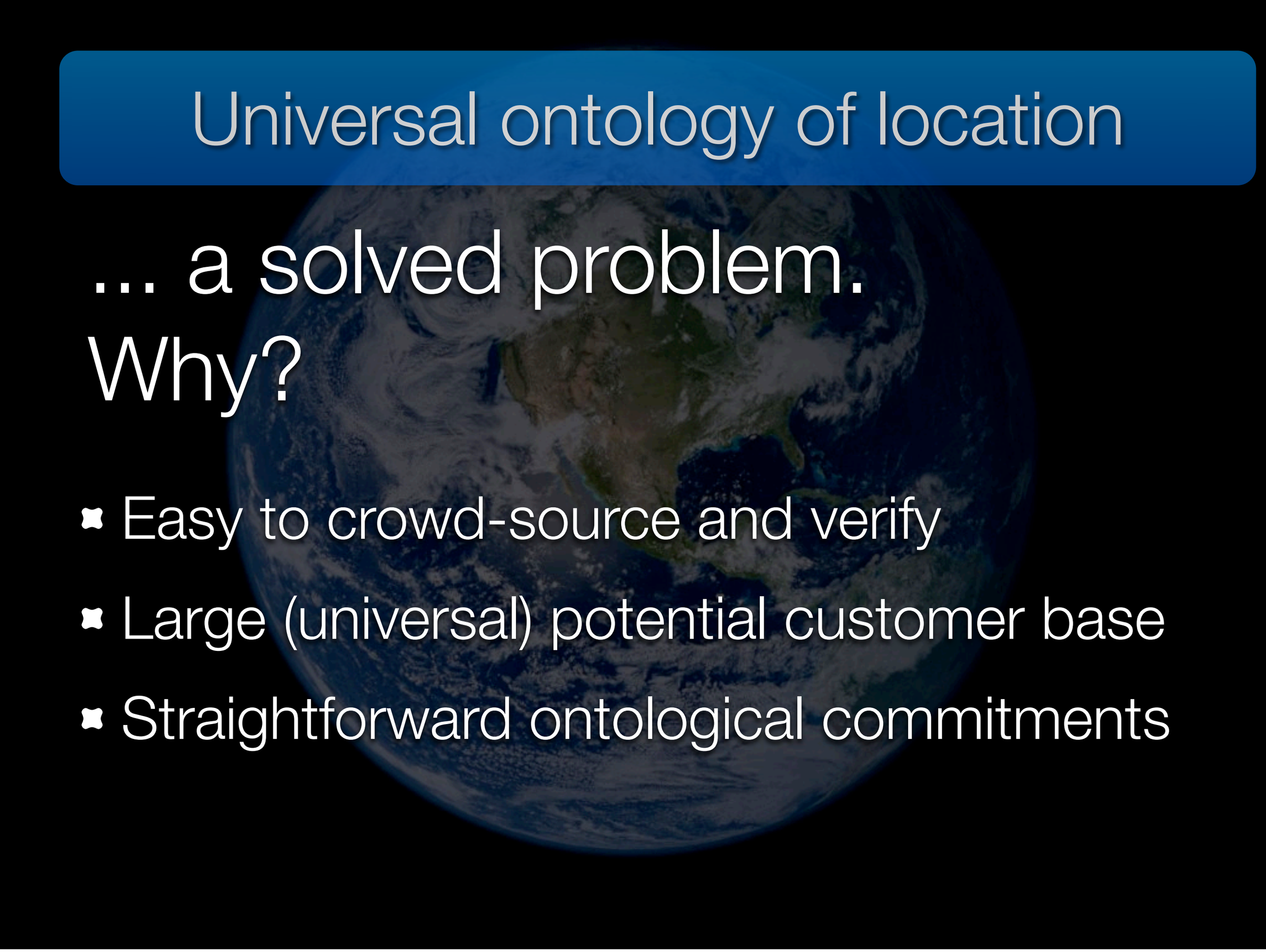
- Gazetteers

- Reverse-geocoding



This is overstating the case, but for a lot of purposes…
These all provide open APIs and free data and there are surely more if you're willing to pay

Universal ontology of location



… a solved problem.

Why?

- Easy to crowd-source and verify
- Large (universal) potential customer base
- Straightforward ontological commitments

Why has this part of the problem been solved? Why have these big companies taken it on?

Personal ontology of location

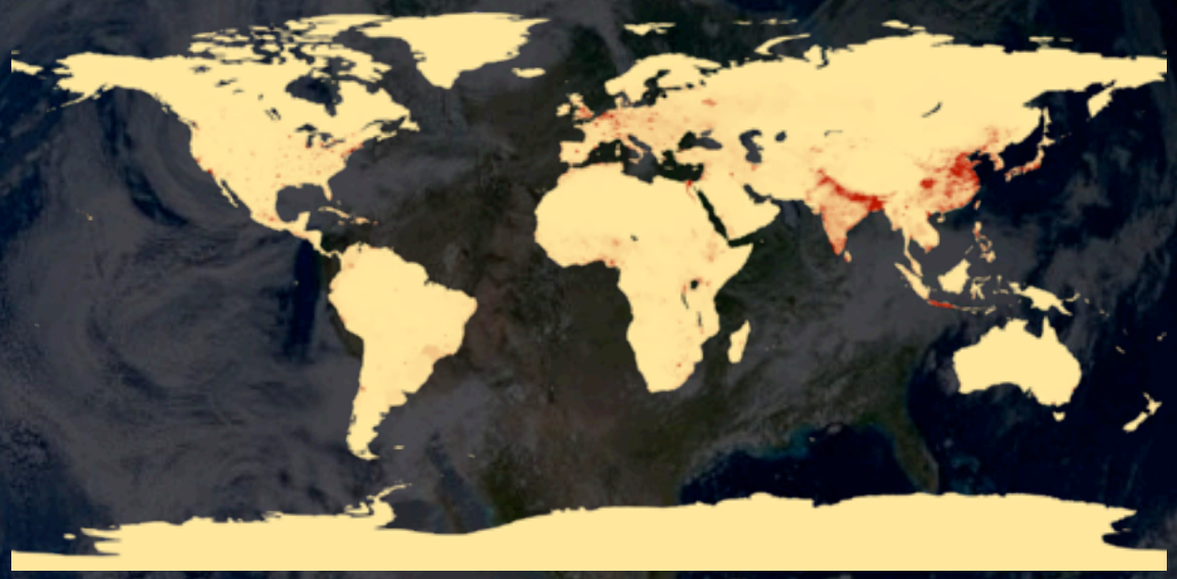
These are rough categories of my own making.

You might recognize some of these terms from humanistic geography, which is no coincidence. I'm going to try to draw out these three levels in different fields:
humanistic geography
philosophy and information science
location-based service use cases

All oversimplifications, but I want to trace some of the history of the study of human geography

1800s

Human geography



- Political geography; economic geography; population geography
- Chorology

Traditional geography (political geography, economic geography, population geography) uses the chorological method to document distribution of properties across the globe.

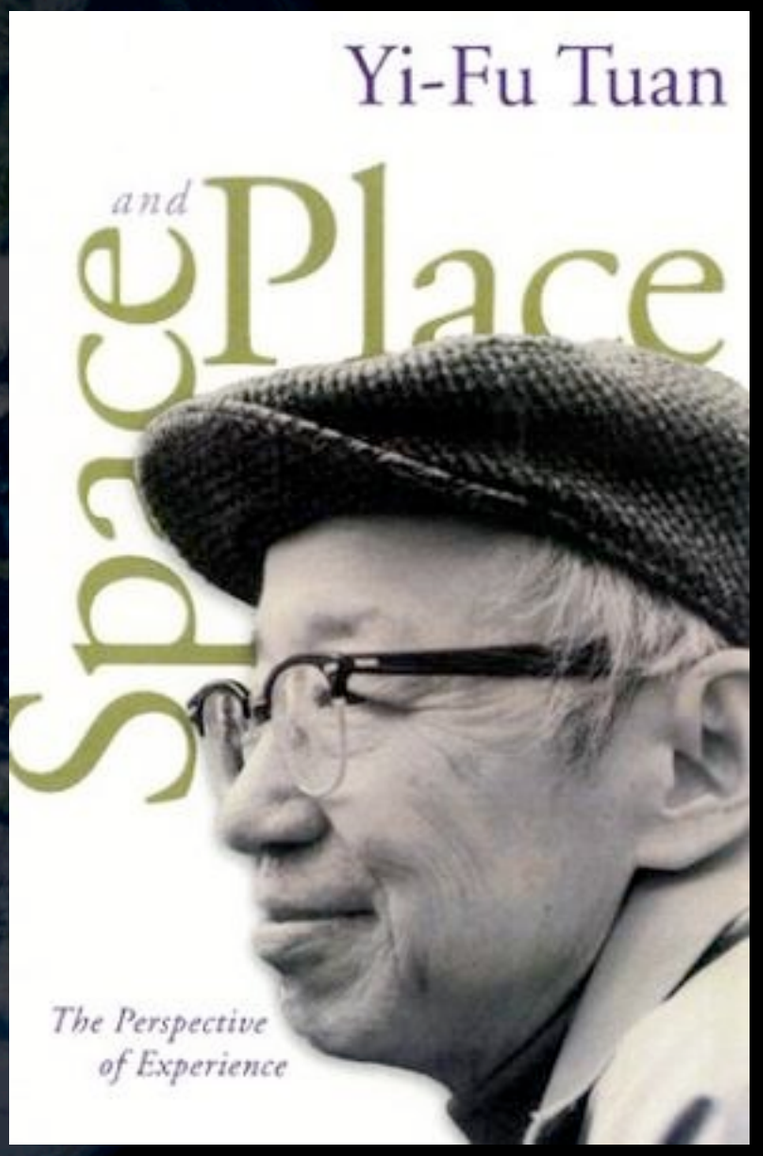
Population density (the map) measures a quantified property over space, but doesn't explain places.

Carl Ritter's work in the 1800s might be the founding of considering the human element of otherwise physical geography.

Humanistic geography

"the move from 'knowing about' places in an objective way, their facts and features, to 'understanding' places, in a more empathetic way, their character and meanings"

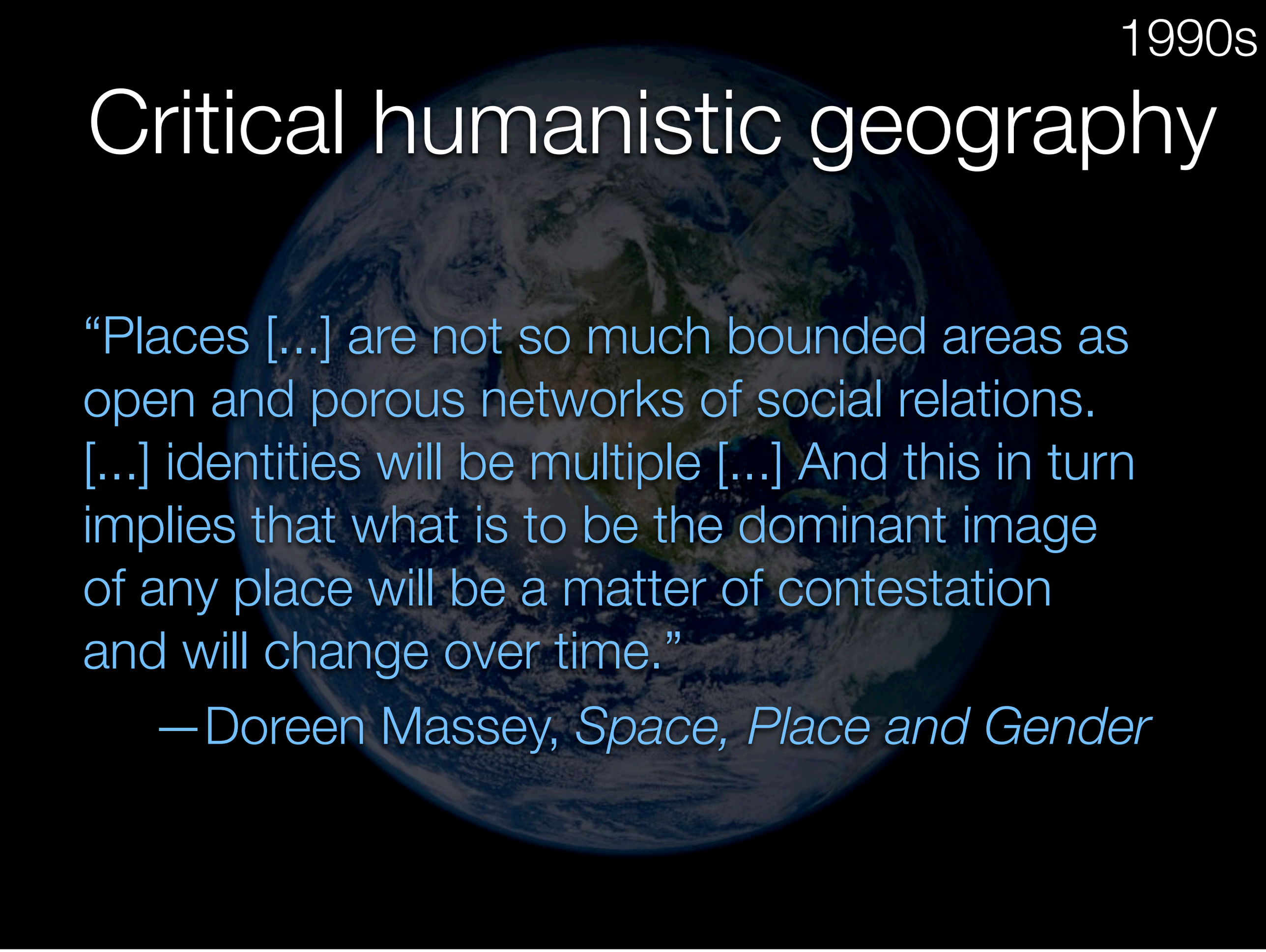
—Stephen Daniels, "Place and Geographical Imagination"



Makes sense for us to look at humanistic geography: since the focus of the neogeographer is on the personal collection of data (where I've been and the geotagged photos I took there, for example) and our goal is to make sense of the data that more and more regular folks are easily able to collect.

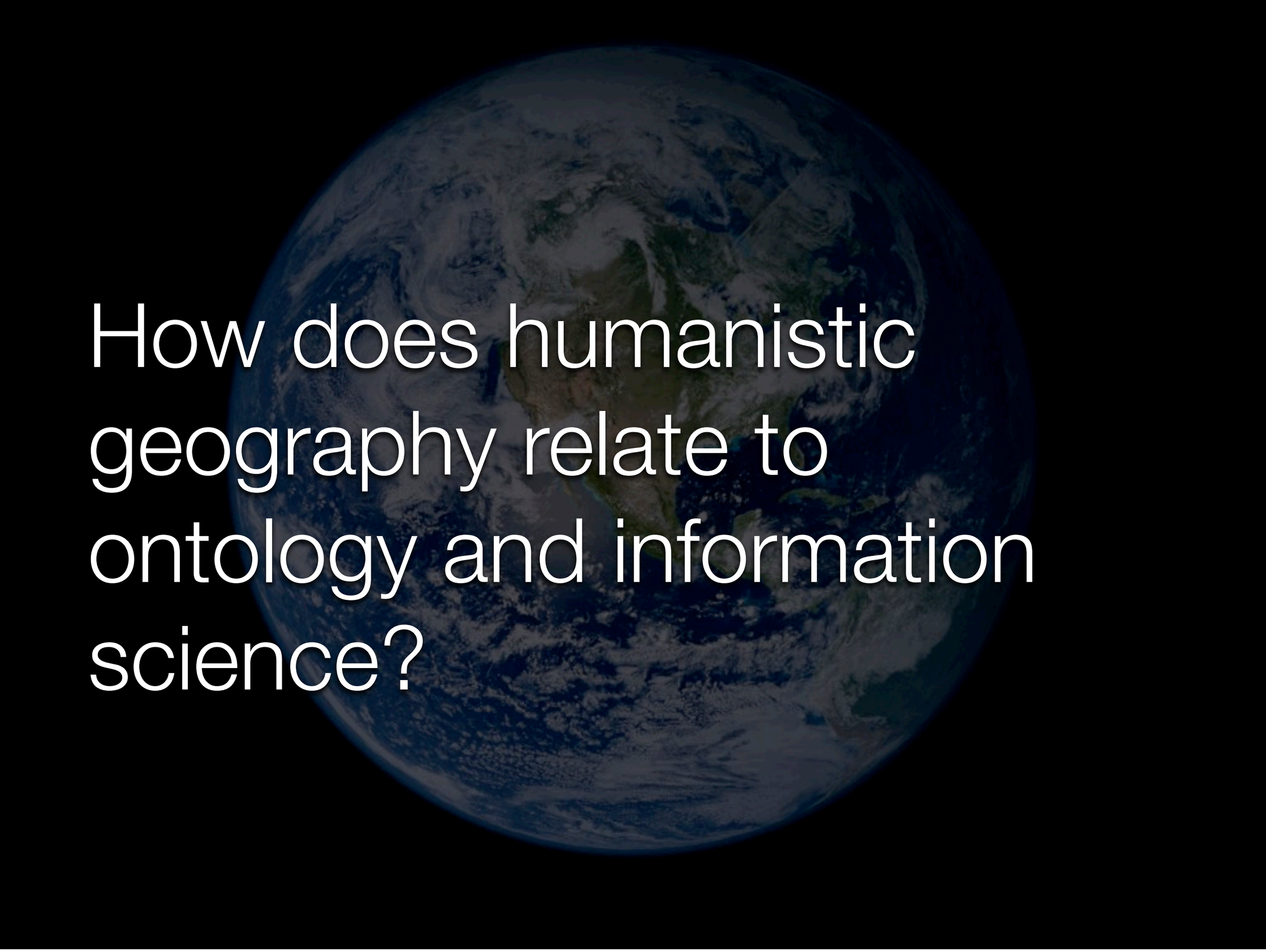
1990s

Critical humanistic geography



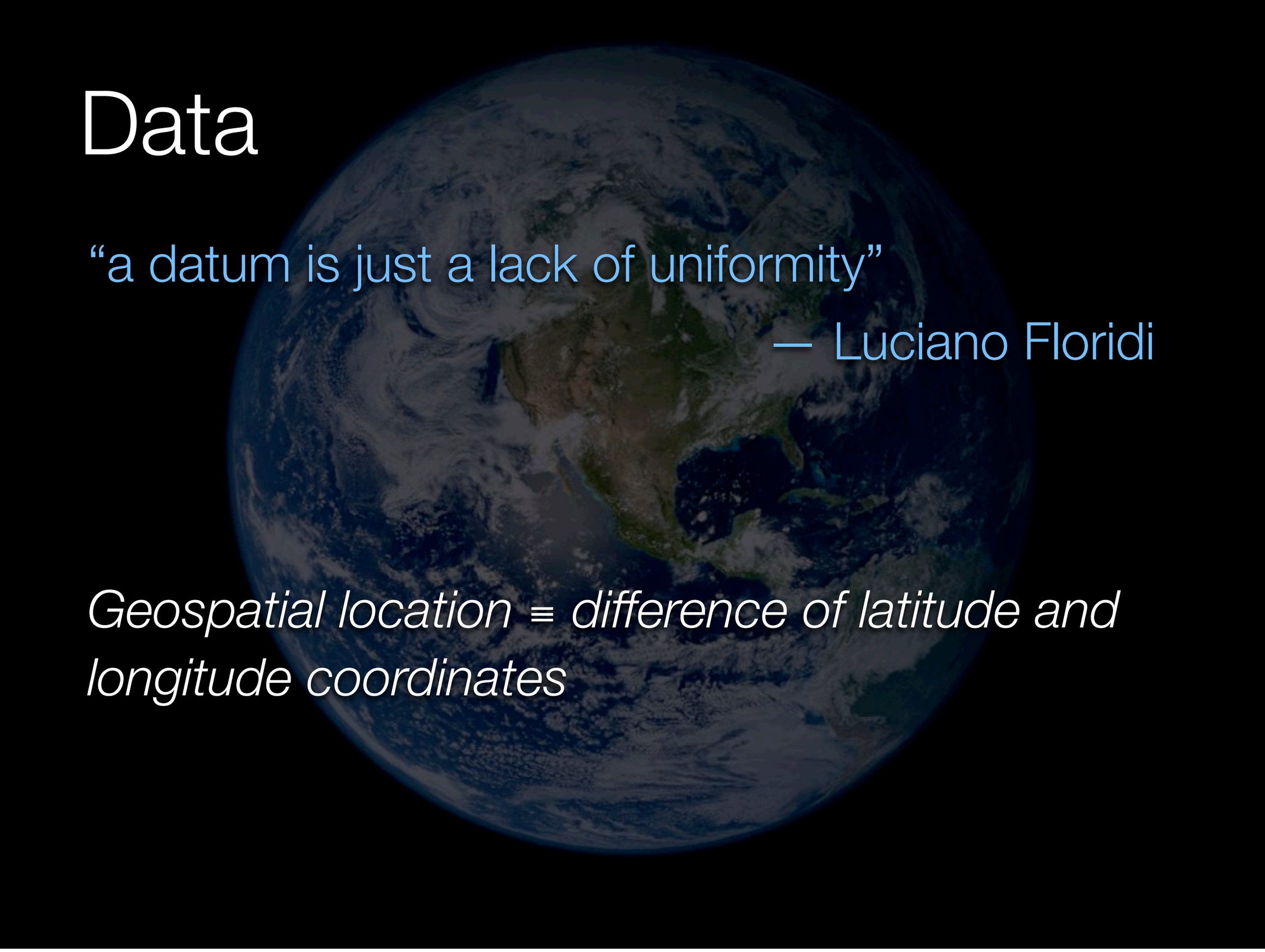
1994. Feminist geography.

Also, David Harvey, Marxist geography; geography as a response to capitalism, post-modernism and neoliberalism.



How does humanistic geography relate to ontology and information science?

Data



"a datum is just a lack of uniformity"

— Luciano Floridi

Geospatial location ≡ difference of latitude and longitude coordinates

Information

General Definition of Information: well-formed, meaningful data

Genetic neutrality: data can have semantics independent of any informee

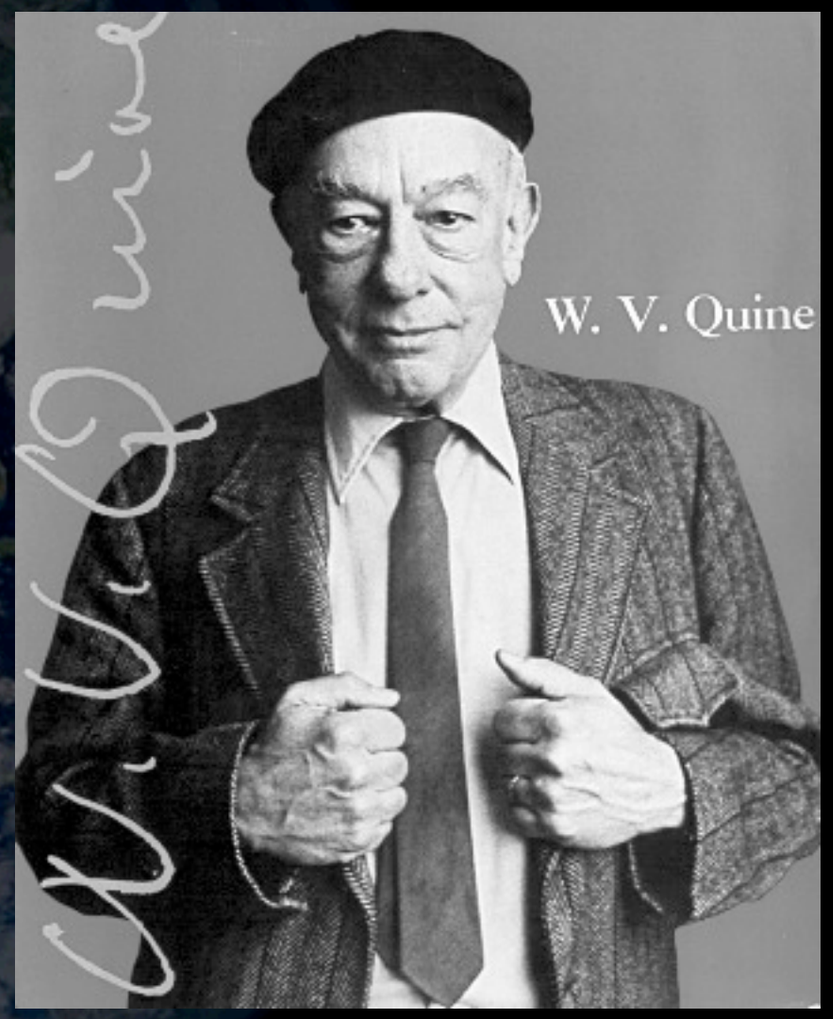
— Luciano Floridi

The meaning of location information depends on the emotional experience of place, not just the objective facts of space.

Also, I dispute the assumption of genetic neutrality. I think the meaning changes based on the recipient -- letting my friends know that I'm at a bar means something different to them than letting my parents know.
(Analogous to reader-response criticism in literary theory.)

What's the "correct" ontology?

- ontological relativity
- confirmation holism



"Two dogmas of empiricism", 1951.

“A shift to pragmatism”

“For those who want to develop or use semantical methods, the decisive question is not the alleged ontological question of the existence of abstract entities but rather the question whether the use of abstract linguistic forms is *expedient and fruitful for the purposes* for which semantical analyses are made.”

— Rudolph Carnap
Empiricism, Semantics, and Ontology

And this is echoed in the information science literature:
Barry Smith (in an encyclopedia edited by Floridi):
“Ontology thus concerns itself not at all with the question of ontological realism, that is with the question whether its conceptualizations are true of some independently existing reality. Rather, it is a strictly pragmatic enterprise.”

Use cases

- contextual triggers
- self-reflection
- sharing and privacy

Personal ontology of location

Personalized/contested places

Where I like to work

Places

Home; work

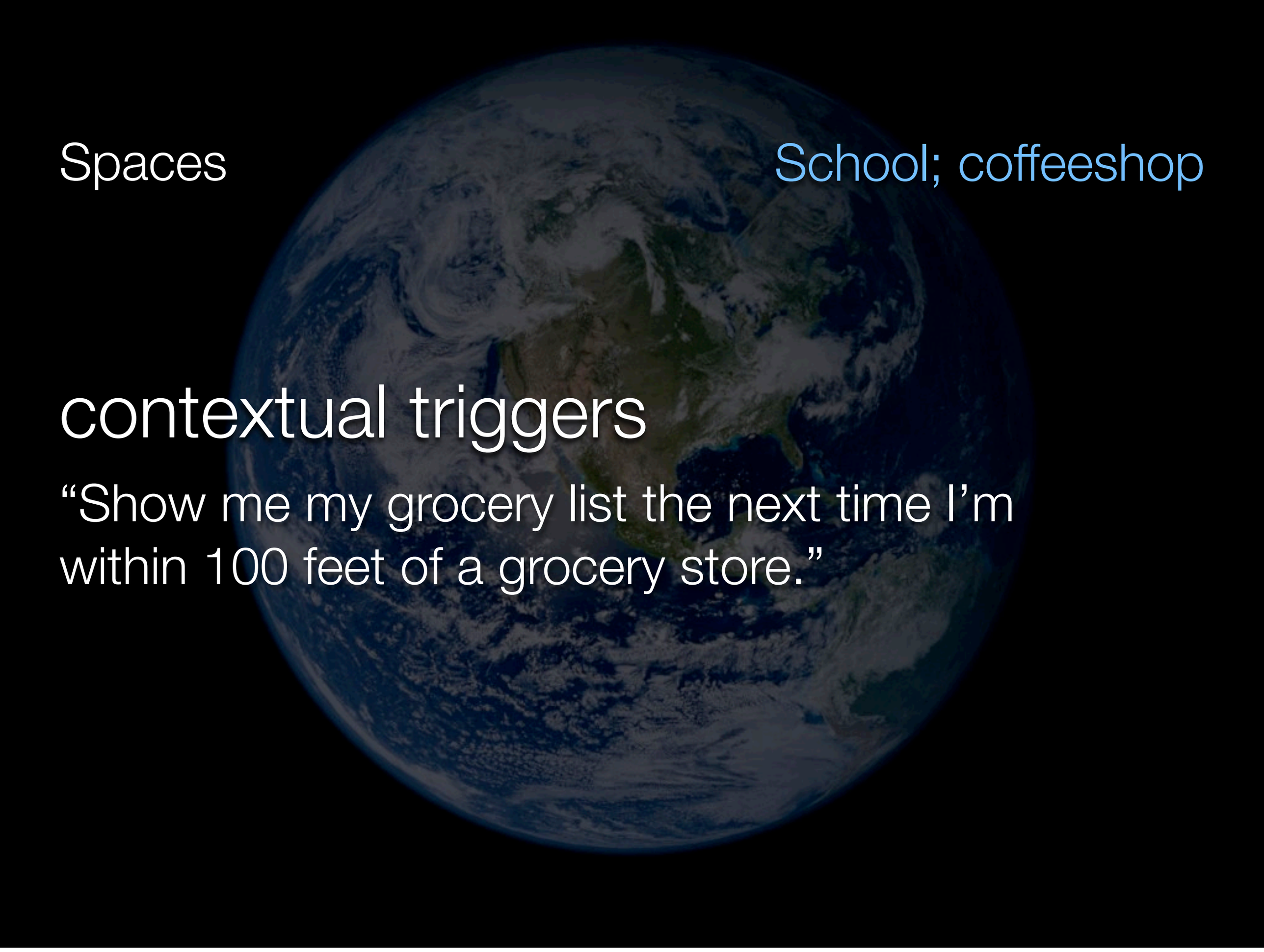
Spaces

School; coffeeshop

Spaces: objective data, the difference between coordinates and objective characteristics
Places: common concepts of meaningful place that apply differently to different subjects
Personalized places: our own concepts (since we know the conflicts can be deep or irresolvable and that any ontology is valid)

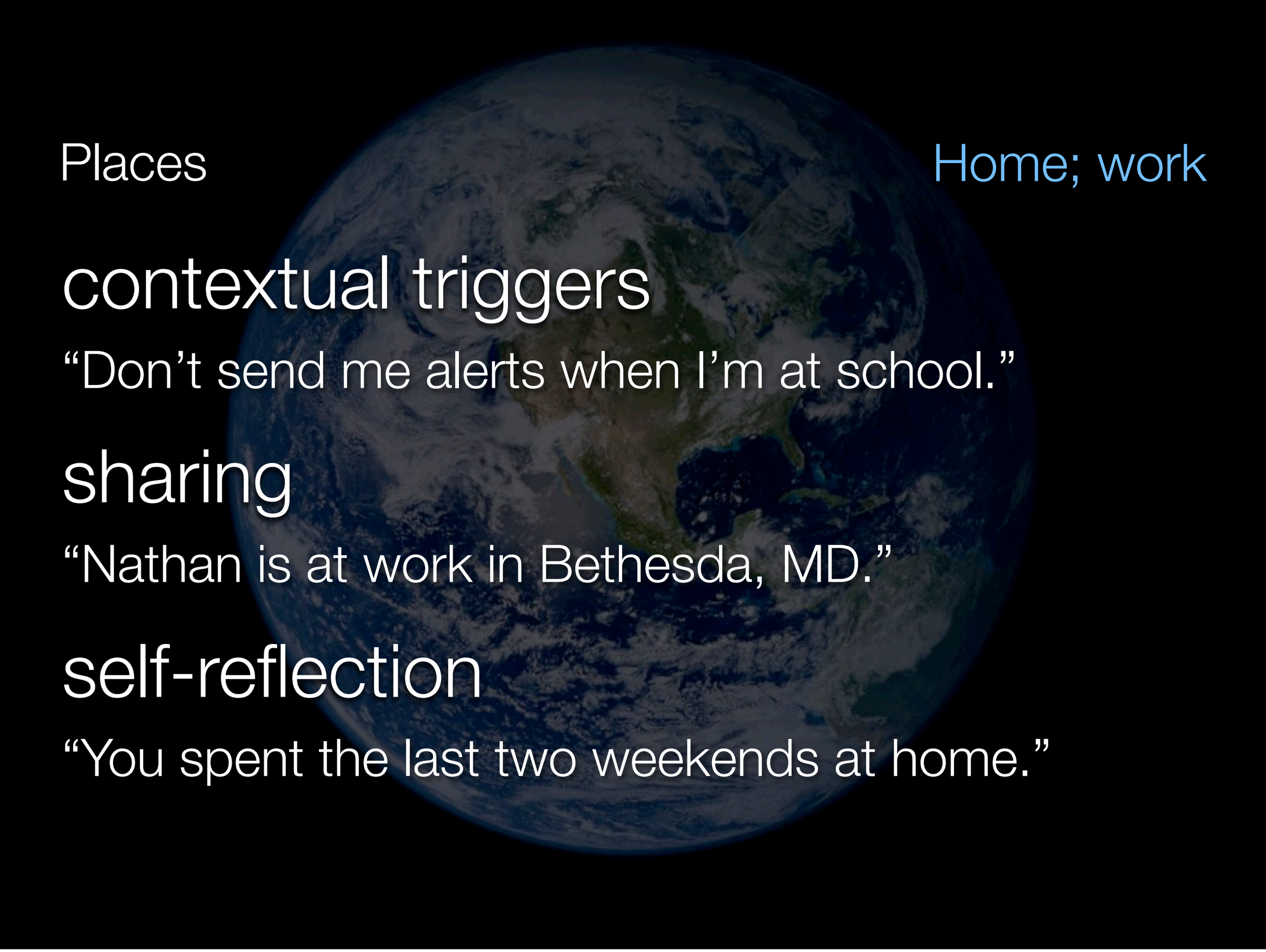
Spaces

School; coffeeshop



contextual triggers

“Show me my grocery list the next time I’m within 100 feet of a grocery store.”



Places: **common** concepts of meaningful place that apply differently to different subjects

Personalized/contested places

Where I like to work; TT

sharing

"Nick is at TT."

self-reflection

"You've been spending evenings at productive places for you."

Personalized places: our **own** concepts (since we know the conflicts can be deep or irresolvable and that any ontology is valid)

You could also imagine sharing that took advantage of the personalized places/categories of other people. "Don't let my parents know when I'm somewhere they don't want me to be."

Embedded goals

foursquare

self-reflection

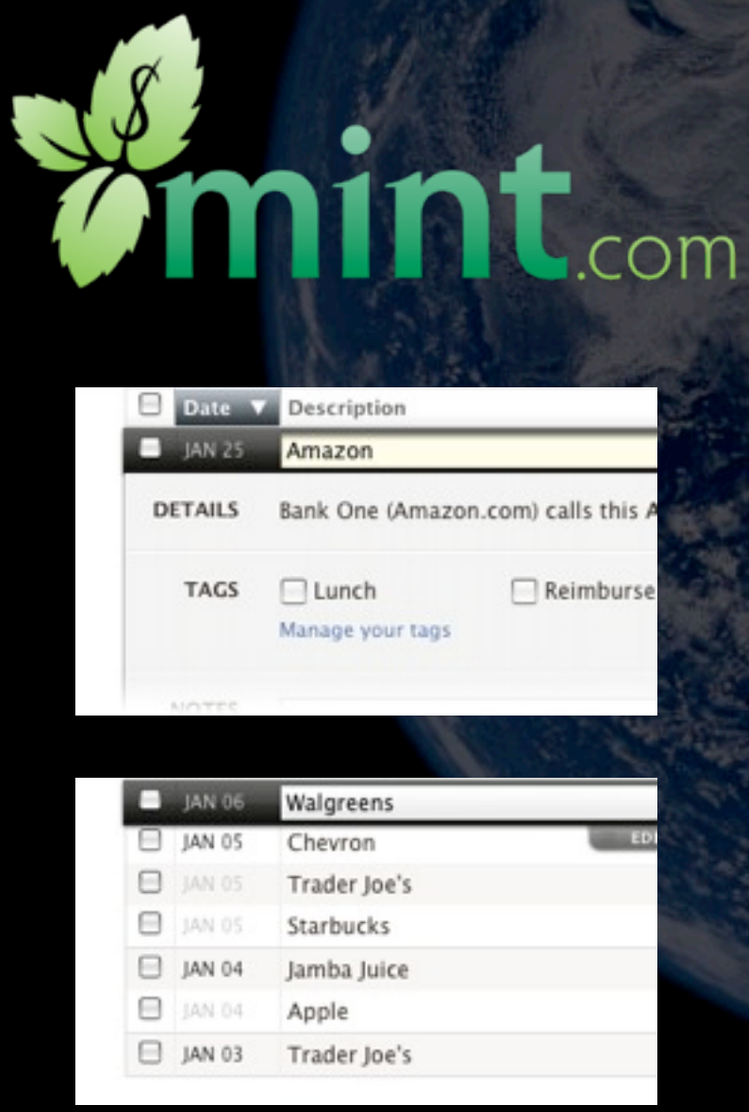
“10 points for meeting your personal goal of using public transportation more often.”

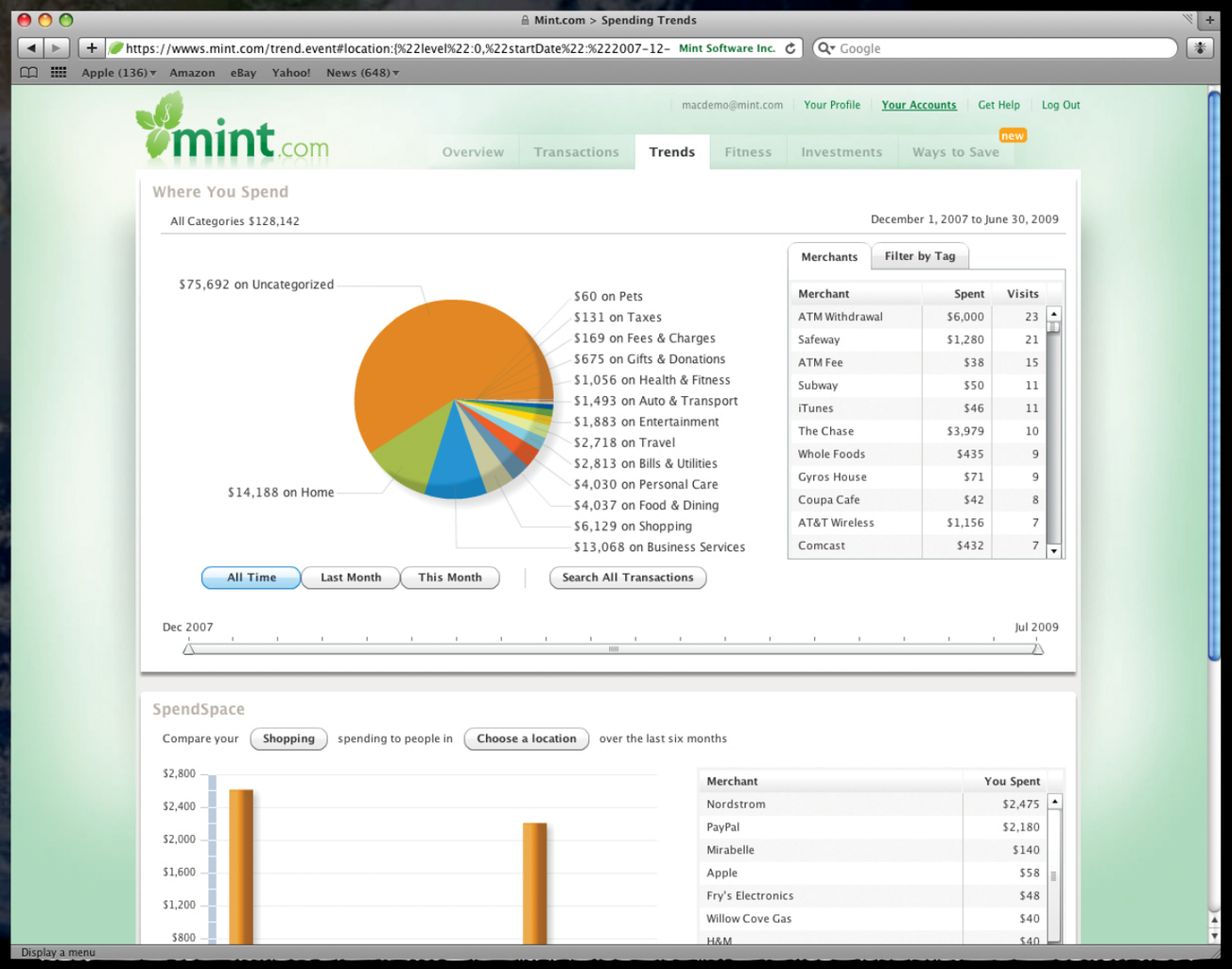
Games, and how they work -- Foursquare builds in its own value system (go new places, outside of working hours). What if you wanted
Useful for self-reflection.

Problems (usability and system design)

- How many users will have a good mental model of a personalized ontology of location?
- How can we help users categorize their location histories on multiple facets (including ones they make up themselves) without constantly interrogating them?
- How can we distinguish purely personal categories from shared social categories from universal categories?

Possible solutions



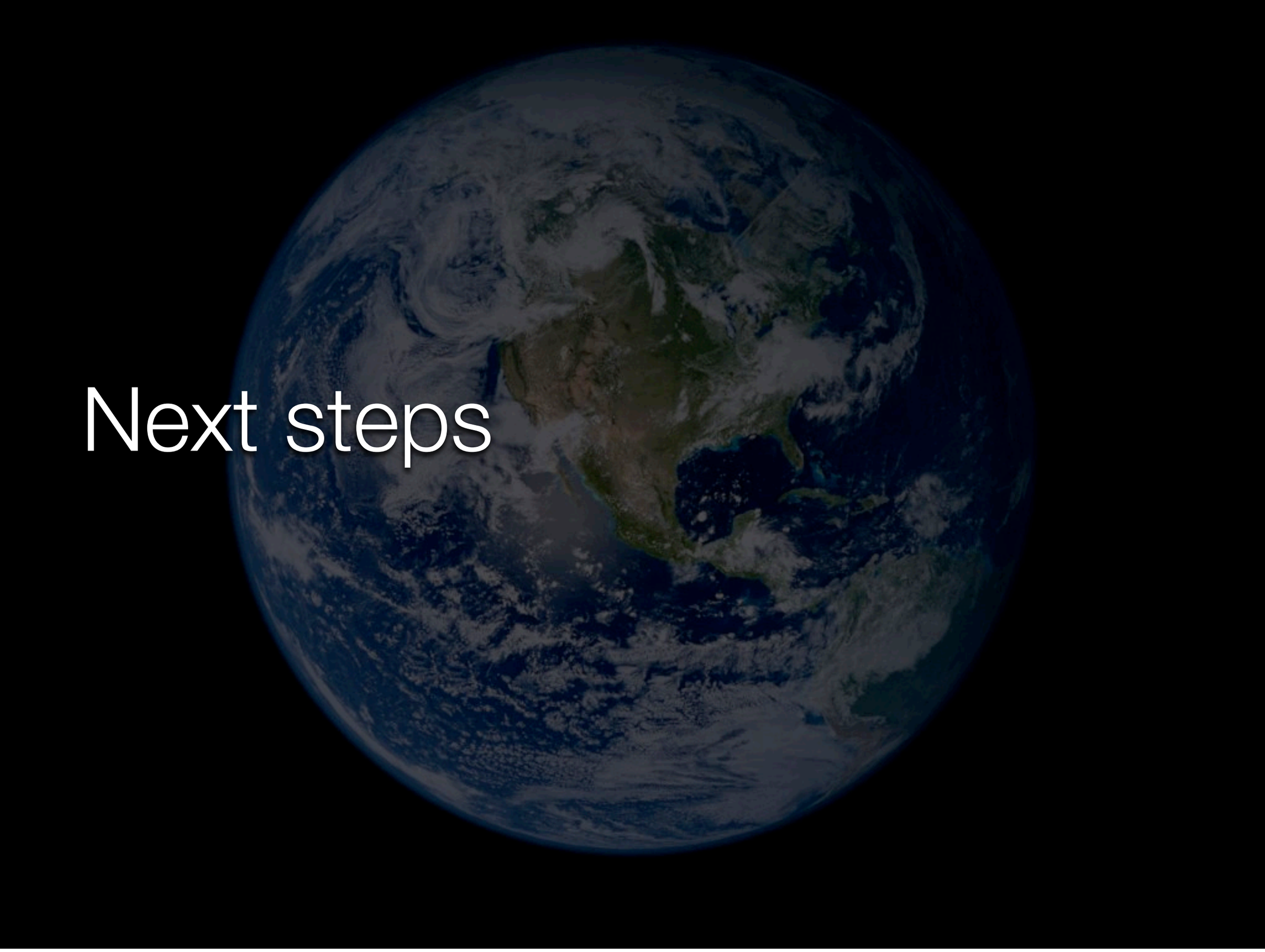


Possible solutions

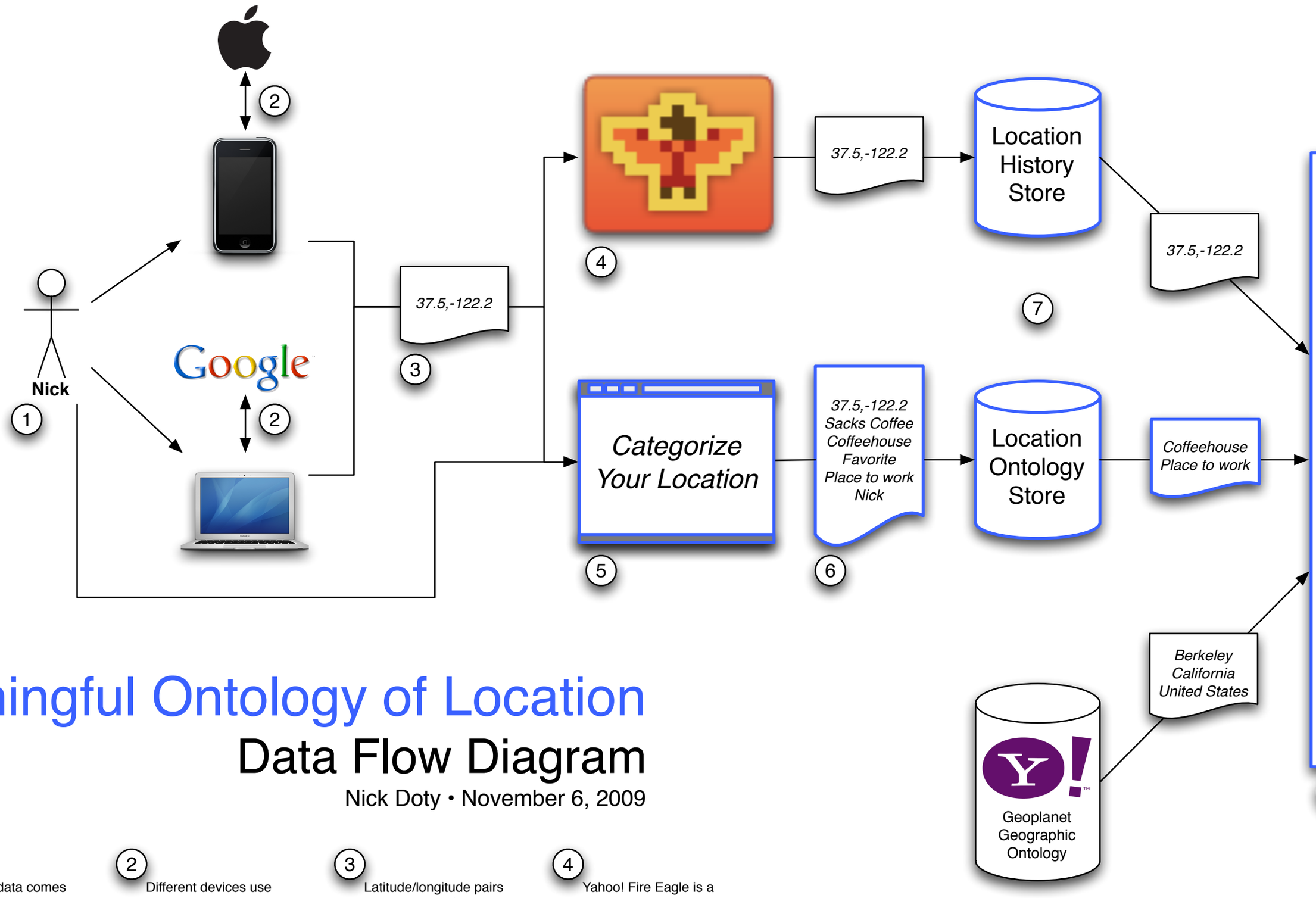
http://vocab.org

Clearinghouses of shared vocabularies.

Next steps



As a final project, build a version of this ontology, and services to contribute and consume



Meaningful Ontology of Location

Data Flow Diagram

Nick Doty • November 6, 2009

1. All location data comes voluntarily from the user. Maintaining the user's privacy is a top priority.

2. Different devices use different location providers (like Google, Apple or Skyhook) to determine their geolocation from WiFi networks or GPS signals.

3. Latitude/longitude pairs are the *lingua franca* of existing geolocation systems.

4. Yahoo! Fire Eagle is a location broker that accepts location from various sources.

5. The user supplies his own categories for a location using a web interface.

6. An XML format we define for describing custom categories for a location.

7. Two databases store a user's location history and their custom location categories, respectively.

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ontology
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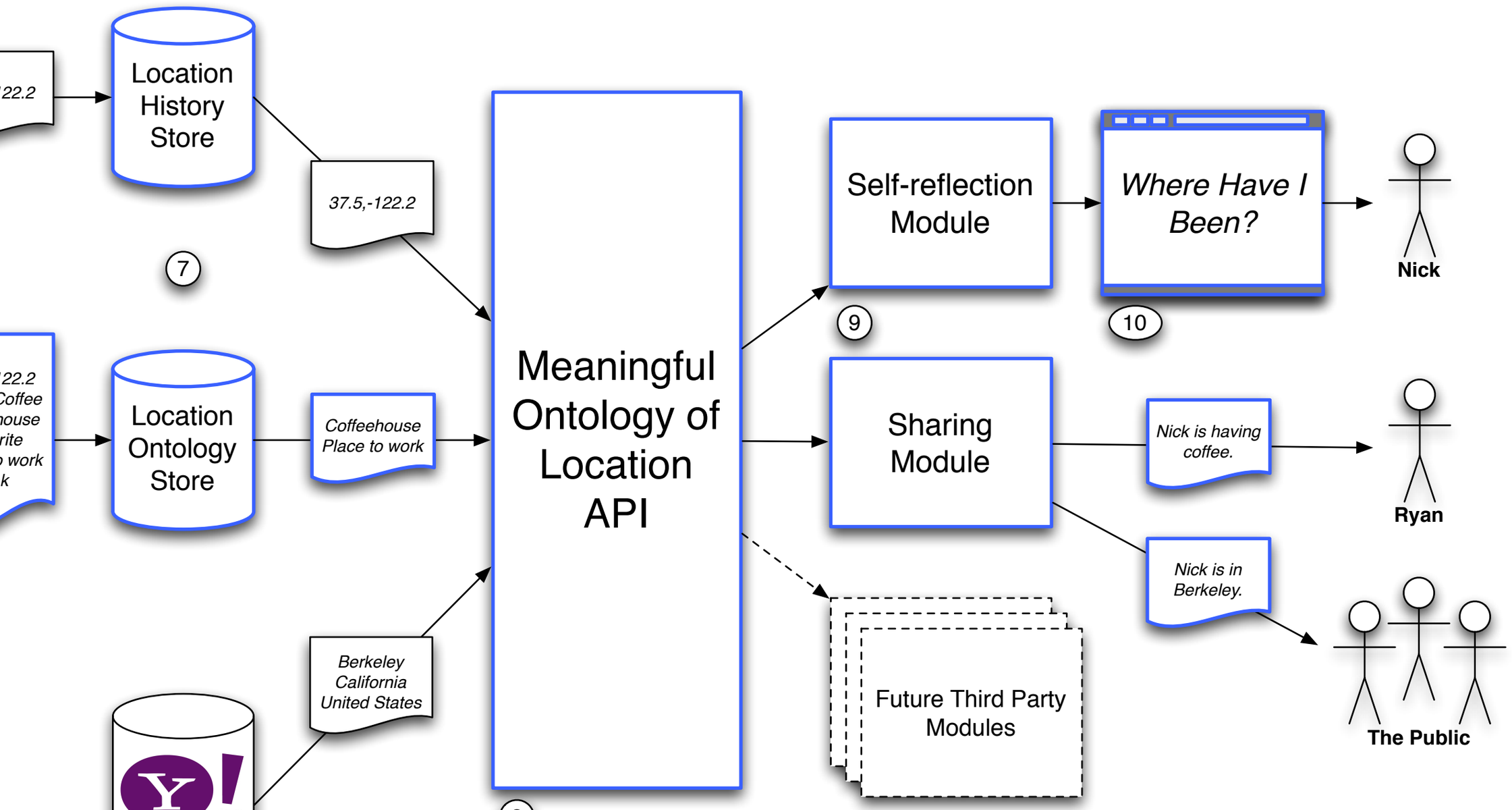
Matching up use cases to those different levels of meaning
What features does an ontology need to support these?

As a final project, build a version of this ontology, and services to contribute and consume



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s for a location.

7 Two databases store a user's location history and their custom location categories, respectively.

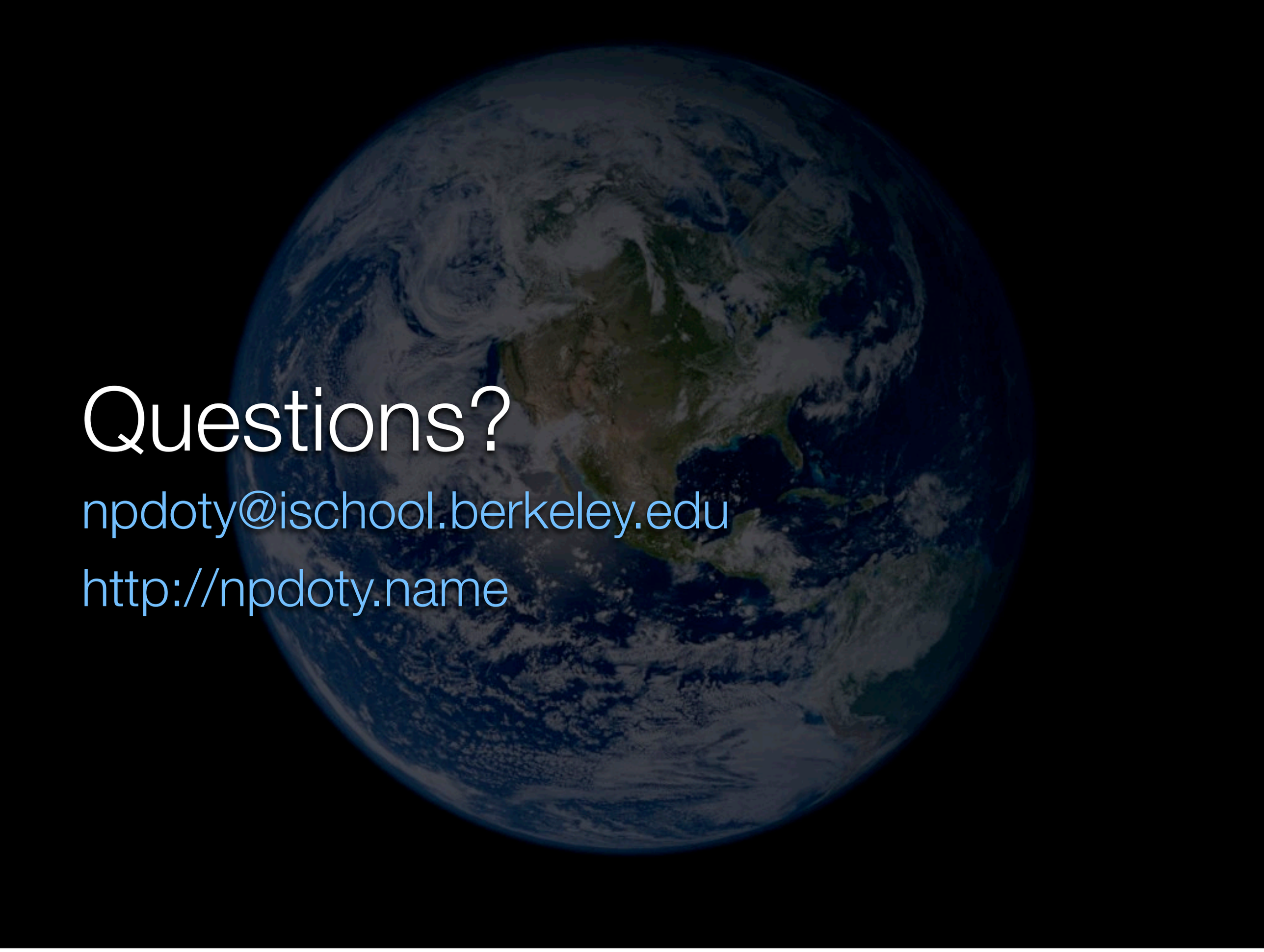
8 Different types of location data (user location; custom ontology; geographic ontology) are combined here in response to API requests.

9 Modules we write interact with the API to satisfy common use cases: analyzing one's own location history or selectively sharing different levels of location data.

10 A web interface provides statistics; e.g. "Last week you spent 42% of your time at home and 8 hours in coffeeshops."

Matching up use cases to those different levels of meaning
What features does an ontology need to support these?

As a final project, build a version of this ontology, and services to contribute and consume



Questions?

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Mythical places