

Historical Gazetteer Elements: Temporal Frameworks

**Symposium on Space-Time Integration
in Geography and GIScience**

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Extending Gazetteers with Time and Entity Relationships

Next Generation Gazetteer

Place Names - Footprints

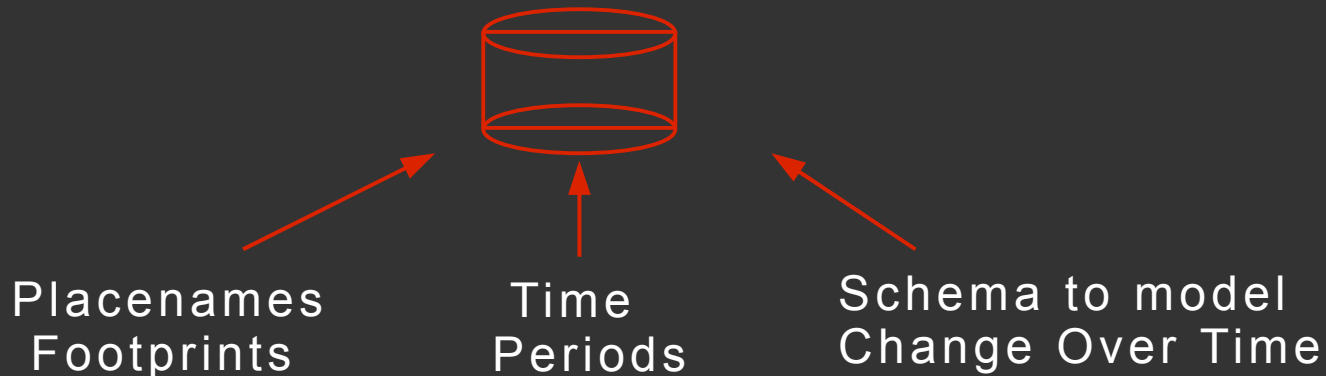
- Name Authorities
- Historical GIS
- Aggregators (geonames)

Chronologies

- Administration Periods
- Timelines (of events)
- Named Time Period Index

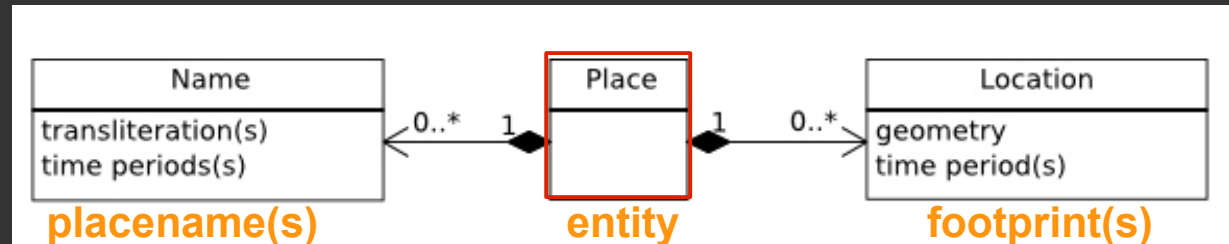
Entity Definitions

- GBHGIS - AUO
- Pleiades - Hist Place
- CHGIS - Hist Instance
- EDGIS - STP

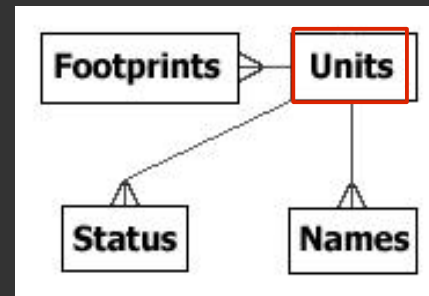


Generic Gazetteer Entity Model

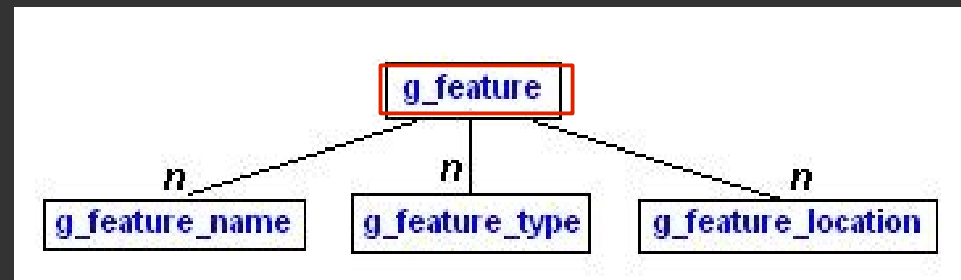
Gillies - Pleiades



Southall - GBHGIS - AUO



Hill - ADL



Date Element Example: ADL

Alexandria Digital Library (ADL)

required: **status** (current, former, proposed)

optional: **dates** (begin and end dates), **date descriptions** (time periods, etc)

application: to feature
 to placename
 to spatial location
 to classifications
 to relationships between places
 to data associated with a place

allows for: linking to external schema for named time periods

ADL notes: “there doesn’t seem to be an external standard for the representation of time that covers the needs of the gazetteer.”

Date Element Examples: GBHGIS

Great Britain Historical GIS - Administrative Unit Ontology

required: **date object** (for source reference)

optional: **date object** (begin and end dates of status, name, footprint)

Application:

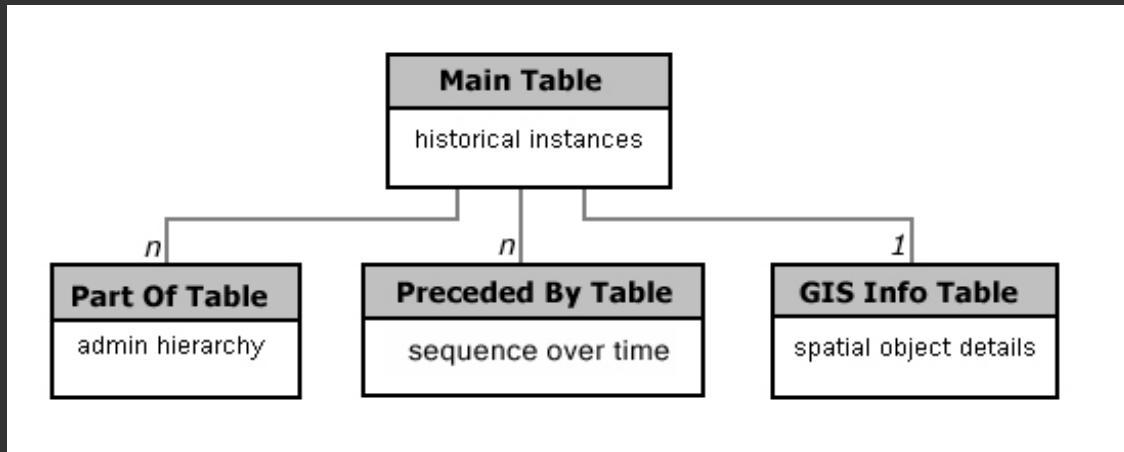
status (indicator of administrative unit status)

name (allows for multiple spellings, or changes of name)

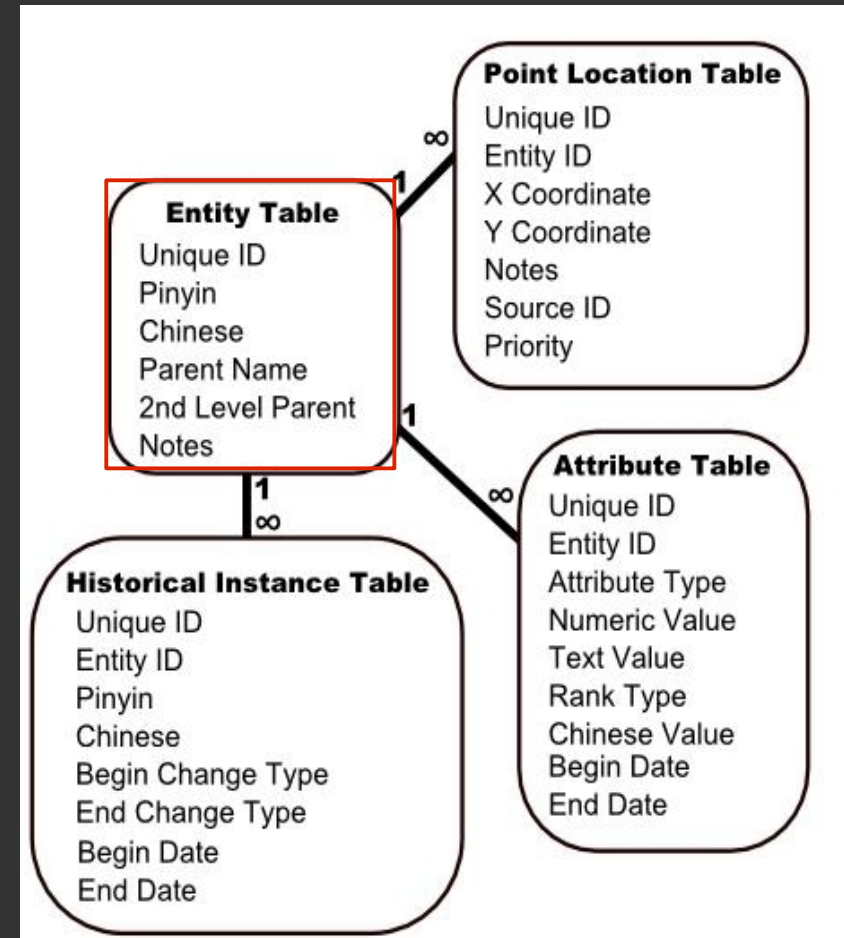
footprint (allows for multiple attestations about locations, or changing footprints)

Gazetteer Entity Model - Other Cases

CHGIS



Mostern & Meeks - Song Gaz



Date Element Examples: CHGIS

China Historical GIS

required: **begin_date**, **end_date** (for each instance and each relationship)

Application:

instances (unique for any change of Placename, Status, Footprint)
part-of relationships (indicating administrative parents)

Related chronology:

reign periods (lookup table based on calendar year)

API: **chgis.hmdc.harvard.edu/xml/**
 placename/
 id/
chgis.hmdc.harvard.edu/xml/query/
 placename/year/

<http://chgis.hmdc.harvard.edu/xml/query/lanzhou/1820>

CHGIS - Sample Webservice Result

```
<item id="9536">
  <placename>
    <name_romanized>Lanzhou Fu</name_romanized>
    <name_vernacular> 兰州府 </name_vernacular>
    <name_alterate> 蘭州府 </name_alterate>
  </placename>
  <feature_type>
    <type_english>prefecture</type_english>
    <type_romanized>Fu</type_romanized>
    <type_vernacular> 府 </type_vernacular>
    <type_id>84</type_id>
  </feature_type>
  <temporal>
    <begin_year>1820</begin_year>
    <begin_year_rule>9</begin_year_rule>
    <end_year>1820</end_year>
    <end_year_rule>9</end_year_rule>
  </temporal>
  <spatial>
    <object_type>point</object_type>
    <coordinate_type>point location</coordinate_type>
    <degrees_latitude>36.047031</degrees_latitude>
    <latitude_direction>N</latitude_direction>
    <degrees_longitude>103.847137</degrees_longitude>
    <longitude_direction>E</longitude_direction>
    <present_location> 甘肃兰州市 </present_location>
  </spatial>
  <evidenced_by>
    <source_note>
      <note_type>administrative seat</note_type>
      <note_id>25000</note_id>
    </source_note>
  </evidenced_by>
  <links>
    <webpage source="CHGIS">http://chgis.hmdc.harvard.edu/query_details.php?ptid=9536</webpage>
    <webpage source="google_map">http://maps.google.com/maps?
q=36.047031,103.847137(lanzhou)&amp;spn=0.1,0.1&amp;t=m&amp;hl=e&amp;z=9</webpage>
  </links>
</item>
```


Geo-parsing

associating references (Place Names) with geospatial footprints

leveraging gazetteers **works**:

gazetteer elements: name, classification, footprint

Geo-parsing Example: Geonames

Jan 2011 - 25 milion requests per day (50% Smartphones)

API: api.geonames.org/search?

api.geonames.org/search?name=placitas&maxRows=10&username=demo

- q
- name
- name_equals
- name_startsWith
- maxRows
- startRow
- country
- countryBias
- continentCode
- adminCode1, adminCode2, adminCode3
- featureClass
- featureCode
- lang
- type (xml,json,rdf)
- style
- isNameRequired
- tag
- operator
- charset
- fuzzy

Gazetteer Entity Model - Geonames

geoname
geonameid int, name varchar(200), asciiname varchar(200), alternatenames varchar(6000), latitude float, longitude float, fclass char(1), fcode varchar(10), country varchar(2), cc2 varchar(60), admin1 varchar(20), admin2 varchar(80), admin3 varchar(20), admin4 varchar(20), population bigint, elevation int, gtopo30 int, timezone varchar(40), moddate date

alternate name
alternatenameid int, geonameid int, isoLanguage varchar(7), alternateName varchar(300), isPreferredName boolean, isShortName boolean

iso_languagecodes

featureCodes

adminCodes

timeZones

continentCodes

postalCodes

Extending Geonames With Dates

geoname

geonameid int,
name varchar(200),
asciiname varchar(200),
alternatenames varchar(6000),
latitude float,
longitude float,
fclass char(1),
fcode varchar(10),
country varchar(2),
cc2 varchar(60),
admin1 varchar(20),
admin2 varchar(80),
admin3 varchar(20),
admin4 varchar(20),
population bigint,
elevation int,
gtopo30 int,
timezone varchar(40),
moddate date

alternate name

alternatenameid int,
geonameid int,
isoLanguage varchar(7),
alternateName varchar(300),
isPreferredName boolean,
isShortName boolean,
isHistoricalName boolean,
existDate date,
endDate date,
srcCiteName varchar(300),
srcCiteLink varchar(300)

Geo-parsing

associating references (Place Names) with geospatial footprints

leveraging gazetteers **works**:

gazetteer elements: name, classification, footprint

GeoTemporal-parsing

associating references (Place Names, events) with temporal footprints

leveraging gazetteers **doesn't work**:

gazetteer elements: dates are optional or entirely missing

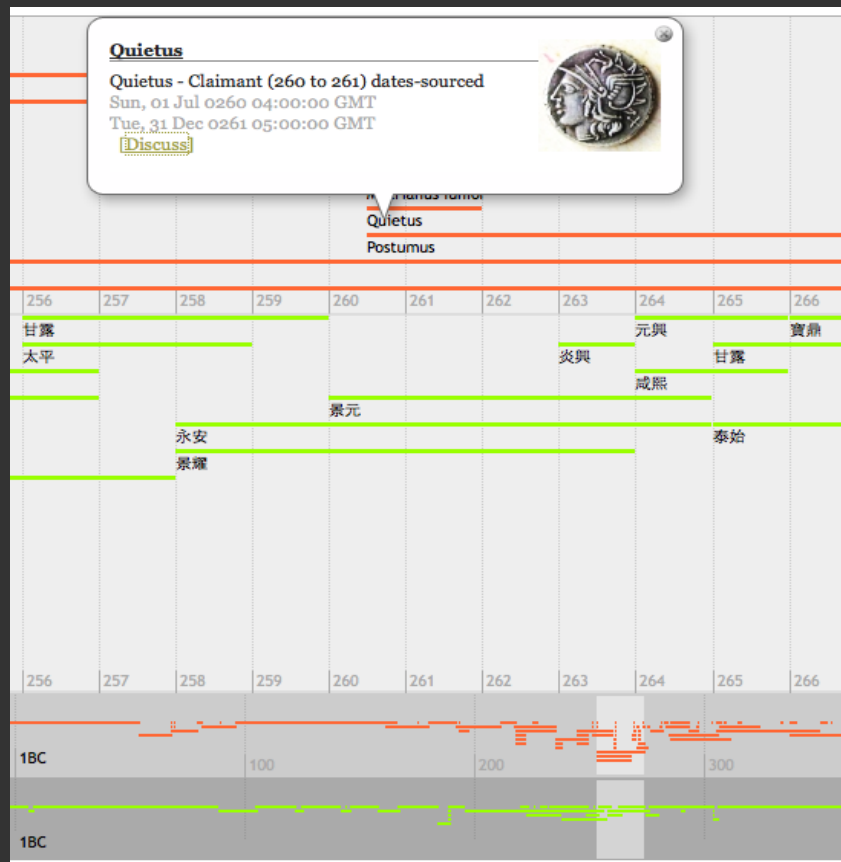
Time Periods Authority to merge Chronologies?

examples:

Named Time Period Directory (Petras, Larson, Buckland)

Dharma Drum Time Authority (Bingeheimer, Wiles)

Common Eras (Erikson, et al)



Temporal Browse < - > Spatial Browse

Roman Empire Chronology [-0753] to [1453]

-- **United Roman Empire** [-0027] to [0395]

---- **Caligula** [0041] to [0054]

United Roman Empire

-- **Thracia**

---- **Hadrianopolis**

Ideally working from either point of entry

Linked Data - geo / chrono

**moving toward ontologies of spatial features
stored as triples (RDF), or deliverable via APIs**

**lacking in ontologies of temporal features (named
time periods)**

**how will the spatial and temporal instances
interact?**

**if you were to develop your own schema for
handling the temporal element, how would do it?**

Publication – Resources

<http://fas.harvard.edu/~chgis/gazetteer>

we welcome your proposals for:

articles for a special journal

a collaborative website / wiki

ideas for building a global historical gazetteer