GTECH 709 Relationships

Cardinality
Relationship classes
Relationship properties
Rules
• to everything else but… (Tobler’s Law)

• This multitude of relationships is usually not well captured in a GIS database

• Which makes tracking real-world situations difficult

• For instance…
Cardinality

- one-to-one
- one-to-many
- many-to-one
- many-to-many
Relationships Across Tables

**Origin table**

<table>
<thead>
<tr>
<th>OBJECTID*</th>
<th>Shape*</th>
<th>VALUE_</th>
<th>PIN*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Polygon</td>
<td>58900</td>
<td>222</td>
</tr>
<tr>
<td>2</td>
<td>Polygon</td>
<td>64500</td>
<td>217</td>
</tr>
<tr>
<td>3</td>
<td>Polygon</td>
<td>61300</td>
<td>219</td>
</tr>
<tr>
<td>4</td>
<td>Polygon</td>
<td>66550</td>
<td>223</td>
</tr>
</tbody>
</table>

**Destination table**

<table>
<thead>
<tr>
<th>OBJECTID*</th>
<th>Property_No*</th>
<th>Owner_Name</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>222</td>
<td>A.B. Jones</td>
<td>13 Evelyn Lane</td>
</tr>
<tr>
<td>2</td>
<td>217</td>
<td>E.C. Smith</td>
<td>16 Evelyn Lane</td>
</tr>
<tr>
<td>3</td>
<td>219</td>
<td>Q.A. Cosmos</td>
<td>18 Evelyn Lane</td>
</tr>
<tr>
<td>4</td>
<td>223</td>
<td>B.D. Brown</td>
<td>12 Evelyn Lane</td>
</tr>
</tbody>
</table>
Relationship Definitions

• Require primary and foreign key to be of the same type
• Supported field types are
  – short integer
  – long integer
  – float
  – double
  – text
  – object ID
Relationship Classes

- Permanently stored in the geodatabase
- Within but not across geodatabase(s)
- Once created cannot be modified
- If corresponding table is deleted, the relationship class is deleted automatically
- Only 2 tables can be related per relationship classes
Relationship Properties

• Cardinality, origin and destination tables
  – As discussed before

• Labels

• Relationship types and messaging

• Attributes
Relationship Labels

• Relationship classes have forward and backward path labels
Relationship Types

- **Simple**
  Table objects exist independently of each other

- **Composite**
  Destination objects cannot exist without an origin object
  - Forward messaging only
  - One-to-one or one-to-many cardinality
• Relationship classes can have attributes describing the relationship
  – E.g., in a relationship between parcels and owners, an attribute of the relationship may be the percentage of ownership
Relationship Rules

• Control how records in the origin and destination tables can be related
  - Which objects or subtypes from the origin table can be related to which objects or subtypes in the destination table
  - Specify a valid cardinality range for related objects or subtypes
Relationship Rule Example

- Wood poles are able to support from 0 to 3 transformers, whereas steel poles support 0 to 5 transformers.