

## Chapter 2

### The *BasicMap* Database

The *BasicMap* subdirectory contains all of the information needed to make township-level maps of Fujian at year-end for each year 1997–2003 and to make an additional map for use with data from the mid-2000 population census....

The ten tables in *BasicMap* constitute a simple database, composed of seven tables named *Adminxx* (where *xx* references a year, 1997–03), one table named *AdminCen*, and two tables named *Shapes* and *Points*. The eight *Admin* tables contain only descriptive (“attribute”) information. The *Shapes* and *Points* tables contain geographic information.

#### §1 – *Admin* Tables

*Admin* tables store attributes pertaining to township-level administrative units in Fujian. Each of the seven *Adminxx* tables lists the township-level units as of year-end *xx*, where *xx* ranges from 97 (1997) through 03 (2003). Township-level units include *zhen* (urban townships), *xiang* (rural townships), *minzu xiang* (minority townships), *jiedao* (urban streets), and certain farms, forests, and salt works. The seven *Adminxx* tables share a common structure, as described in Table 2.2. Township-level entities are classified into twelve types, as shown in Table 2.3. [*Tables omitted.*]

Each *Adminxx* table lists individually all *zhen*, *xiang*, and *minzu xiang* in existence at year-end *xx*. All *jiedao* at year-end are also listed—some individually in the “name” column, some in the “containxx” column, as components of an entity called “merged *jiedao*.” The list of *zhen*, *xiang*, *minzu xiang*, and *jiedao* at year-end is taken from successive editions of the provincial yearbook. Farms, forests, and salt works (types 41–51) are listed individually; the farms, forests, and salt works listed in each *Admin* table are those with boundaries shown in the provincial atlas of 1999 and not reported to have

been established after year-end *xx* (if *xx* is before 1999) or abolished before year-end *xx* (if *xx* is 1999 or later). For further information concerning the *Atlas*, see Chapter 3....

The eighth *Admin* table, called *AdminCen*, lists township-level entities used in the 2000 population census at mid-year. The year suffix for mid-year 2000 is *C*. For example, the variable code for type of entity at the time of the census is “typeC.” For further information concerning the census, see Appendix 6.

The *Admin* tables vary in length, because the number of township-level entities changes from year to year. The number of records in each table (not including the header row giving variable codes) is as follows:

Admin97	1066 records
Admin98	1067
Admin99	1077
Admin00	1080
Admin01	1080
Admin02	1074
Admin03	1072
AdminCen	1082.

## §2 – Shapes and the *Shapes* Table

The *Shapes* and *Points* tables store locational information pertaining to township-level entities in Fujian. The *Shapes* table describes each entity’s territory, in terms of the Gauss-Krueger coordinate system. [*Parameters are given in Table 2.1, omitted here.*]

Shapes are digital map objects that represent areas (closed boundaries and their interiors). A single shape can represent a number of disjoint areas. In the case of a coastal township, for example, a single shape might represent the township’s territory on the mainland plus a number of offshore islands that also lie within that township.

Maps showing township-level boundaries at year-end (or at mid-year 2000) can be assembled from objects in the *Shapes* table. This table contains 1158 shapes, all of which represent township-level entities of the various types listed in Table 2.3 above. [*Table omitted.*] The shapes embody only locational information. For example, if the name of a township changes but its boundaries do not, the same shape represents the township both before and after the name change. Similarly, if the type of entity changes (say, from farm to xiang) but its boundaries do not, the same shape represents the township both before and after the change. But if the boundaries of a township change—though its name and type do not—different shapes represent the township before and after the boundary change. Apart from the shapes themselves, the *Shapes* table contains ShapeID numbers, with each shape having a unique ID.

The set of all shapes in the *Shapes* table that pertain to a given time (say, year-end 1997) constitute a complete map of Fujian province, excluding only some small off-shore islands. In other words, a map assembled from this set of shapes has no holes (areas in Fujian not represented by shapes). None of the 1997 shapes overlap; borders of adjacent shapes coincide, but no part of any interior coincides with any part of any other....

The objects in the *Shapes* table capture locational information contained in the 1999 *Atlas* and, to a lesser extent, in other atlases and in various sheet maps, gazetteers, and yearbooks. (For further detail concerning source materials and the construction of the *Shapes* table, see Chapters 4 and 5.) The coastline represented by objects in the *Shapes* table is that shown in the *Atlas*; no adjustments are made to the coastline, to reflect changes that may have occurred between 1997 and 1999 or between 1999 and 2003. The objects in the *Shapes* table retain the level of detail shown on the source maps, most of which were drawn to scales of 1:200,000 or 1:250,000, and are best suited for display at these or similar scales....

#### §4 – Associating Shapes with Township-Level Entities

In the *Admin* tables, the ShapeID number associated with a township-level entity points to the shape representing that entity. Within a single *Admin* table, the ShapeID associated with each entity is unique. A single ShapeID, however, can appear in multiple *Admin* tables—if, for example, a given township (with unchanged boundaries) exists in more than one year. In fact, the great majority of ShapeIDs appear in every *Admin* table, because the number of boundary changes each year is small compared to the total number of township-level entities.

The set of map objects in the *Shapes* table is the union of all shapes referenced in the eight *Admin* tables. Mapping the township-level entities that existed at a particular time—say, year-end 1997—requires selection of those map objects (and only those objects) that represent such entities. Joining the *Admin97* and *Shapes* tables permits such selection. The appropriate operation is an “inner” join, using ShapeID as key. In most desktop-mapping and GIS packages, an inner join is executed by issuing a query in SQL (structured query language). The relevant query may vary slightly among software packages, but will resemble the following (where \* represents the set of all columns to be selected):

```
Select * from Admin97 and Shapes
where Admin97.ShapeID = Shapes.ShapeID.
```

This query will (1) select all ShapeIDs that appear in both tables, discarding those that appear in only one, and (2) join each remaining record in the *Admin97* table with the corresponding record in the *Shapes* table. The result will be a new table—say, *Map97*—that contains a shape for each township-level entity of year-end 1997, with

information from the *Admin* table attached to each such shape.

For more detailed discussion of joins and for sample maps produced from joins of the *Admin* and *Shapes* tables, see Appendix 8 (supplied as a separate PDF file, in the *Text\Appendix* subdirectory)....