

spain-2007-05.txt, Ralph Abraham, March 18, 2007

## SEVILLA

\*\*\* Wednesday, February 28, 2007.

My first presentation to the students. This was devoted to the the basic concepts of chaos theory, with examples of the bifurcation concept to the Ross School curriculum. On going out, we observed extensive preparations for Holy Week in Sevilla. Like Cordoba, this city had been a major port on the river Guadalquivir, and has layers of Roman, Gothic, Islamic, and Catholic ruins. At the end of the day the students had a study period, in which, in teams, they explored the online library of NetLogo models, finding interesting parallels with their own team projects.

\*\*\* Thursday, March 01, 2007.

This was the day of my second talk to the students. In addition to illustrating the concepts of dynamical systems theory using applets from [www.visual-chaos.org/lab](http://www.visual-chaos.org/lab), I gave a tour of NetLogo models from [www.northwestern.edu/netlogo](http://www.northwestern.edu/netlogo).

On our first day of guided exploration in Sevilla, we walked to the Alcazar, or Castle of the Christian Kings. This structure was built in the 13th century, on top of Islamic remains which cover a base of Roman remains. It had been a fort in 913, an Islamic palace in the 11th and 12th centuries, and a Christian castle after the reconquest of Sevilla of 1248. Note that this is twelve years later than the reconquest of Cordoba: the islamic territory was being slowly pushed to the South.

In the Alcazar I was delighted by many more examples of Islamic patterns, including the three-dimensional modular patterns called muqarnas around the dome of the Hall of the Ambassadors. Our guide explained the step-by-step evolution of the ceramic arts as manifest in the wall and floor tiles of the interior of the castle.

In the evening we attended a show of very advanced flamenco guitar and dance.

\*\*\* Friday, March 02, 2007.

We went again to the Alcazar. Then the students went on with the guide to the Cathedral. Rebuilt in the 15th century, this is another monster, covering 2.6 acres, about half the area of Saint Peter's in Rome, or the Mezquita in Cordoba.

Meanwhile, Courtney, Carla, Darius, and I made a sidetrip to Jerez, and the Royal Andalucian School of Equestrian Art. Besides 120 stallions, dressage

training, and the spectacular tack room, there is an excellent museum for the development of the modern horse about 15,000 BC. This is yet another example of cultural diffusion, this time coupled with biological evolution.

\*\*\* Saturday, March 03, 2007.

Overland to Granada, with a lunch stop in Ronda. This is a small city, one of Spain's oldest, in a spectacular location above a natural gorge. It was overtaken by the Reconquest in 1485. The main monument, the Mondragon Palace, was built in 1314. Ronda also offers an excellent archeological museum, and one of the oldest bullrings in Spain. After a fabulous repast (not for vegetarians) --- on to Granada!

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