**HAA 18J: Japanese Architecture**

Lecture 3: Timber-Frame Engineering

**Historical Eras**

• Asuka (538/552 to 710 CE), period marked by the arrival of Buddhism to Japan, transition from Neolithic federation of clans to imperial state

• Nara (710 to 794 CE), when the Yamato state establishes its capital at Heijō or Nara

**Sites Mentioned**

• Onbashira Festival. Held every six years for the renewal of Suwa Grand Shrine (Lake Suwa,

Nagano Prefecture), goes back 1200 years.

• Kasuga Shrine, Nara City, established 768 and renewed every 30 to 50 years until the mid 19th

century. Several buildings recently renewed in 2015-16, and again in 2022.

• Izumo Shrine, Shimane Prefecture. Formalized as shrine compound as early as 7th century,

current buildings date from 1744 except for Main Shrine, which was renewed in 2013.

• Asukadera. The first Buddhist temple in Japan, founded by clan leader Soga Umako and

completed in the year 596. It was built by craftsmen from Paekche, one of four Korean states on

the peninsula at the time, and later went by the name Gangōji.

• Hall of Supreme Harmony, Forbidden City, Beijing, China, ca. 1406-1420

• Imperial Hotel, Tokyo, 1919-1923, designed by Frank Lloyd Wright (destroyed 1968)

• Hall of 33 Bays (Sanjūsangen-dō or Rengeō-in), Kyoto, 1266 (original dated 1164)

**People Mentioned: Prince Shōtoku** (574-622), member of **Soga clan** and imperial regent, known in his own time as Prince Umayado. Founded Hōryūji (originally Ikarugadera) close to his Ikaruga Palace in 607.

**Four Zones of Timber-Frame Architecture**

• FOUNDATION: rammed-earth foundations; foundation stones; granite facing

• PILLARS: posts, pillars, columns; tie-beams or purlins; cross- or transverse beams; (rainbow, shrimp); bay; *shaku* (Japanese foot); ***moya***(central or core space of a building); ***hisashi*** (one-bay wide corridor-like space surrounding *moya*); ***mokoshi***(pent-roof enclosure); vermilion (cinnabar) red

• BRACKET SETS: bearing blocks; bracket arms (elbows); three-block complex; one-, two-, and three-step complexes; rafters (tail, hip); parallel or radial raftering

• ROOF: ridge pole; gable fish ornaments; pantiles; semicircular tiles; eaves-end tiles; demon tiles

**Major Characteristics of Timber-Frame Architecture**

• Grand appearance (sweeping curves, eaves beyond wall plane)

• Protection (protects wooden frame)

• Lack of walls (load-bearing pillars)

• Spanning (open plan)

• Interregional (found throughout East Asia)

• Flexible program (palaces, temples)