

## Sumo and the *Dohyo* (Sumo ring)

Nobuhiko Tsunefuka

The large majority of Japanese would probably say that Sumo is the national sport of their country. The origins of Sumo are mentioned in the *Kojiki*, or Records of Ancient Matters, which tells that the two gods Takeminakata no Kami and Takemikazuchi no Kami wrestled each other to get the ancient land of Izumo (now in Shimane Pref.) until Takemikazuchi no Kami was victorious, and in the *Nihon-shoki*, or Chronicles of Japan, there is a description of a match between the wrestlers Nomi no Sukune and Taima no Kehaya, held for Emperor Suinin, the 11<sup>th</sup> emperor of Japan, in order to determine the champion of Japan. The Chronicles describe how Nomi no Sukune won after delivering some bone breaking kicks to the side bones and the ribs of Taima no Kehaya that actually killed his opponent. For this reason Nomi no Sukune is considered as the founding father of Sumo with the Nomi-no-Sukune Shrine dedicated in his honor. This shrine in the Sumida Ward of Tokyo is the site of a Shinto blessing performed two days before the opening day of Honbashi, when it is held in Tokyo, and is presided over by a Shinto Priest from the Izumo-Taisha Shrine with officials of the Japan Sumo Association, top Sumo Judges, and other persons related to the Sumo *chaya*.

Towards the end of the Nara period, Emperor Shomu established the Sumai-no-Sechi (literally “Sumo Event”) as one part of the “Sando-sechi (Tripartite Events)” of his imperial court. During the Heian period the Sumai-no-Sechi was an event with pomp and splendor as part of the Tanabata (Star Festival) attended by the Emperor. The competition between Sumo wrestler scouts soon heated up throughout the country and an imperial edict was issued requiring all provincial governors and district governors to present their most skilled wrestlers. Although in ancient times Sumo wrestlers were allowed to fight in a style reminiscent of today’s professional wrestling with kicking, poking and punching allowed, such techniques were banned in the Sumai-no-Sechi, and the pushing and throwing techniques of Sumo were developed and refined.

During the Samurai period, leaders of the Samurai class such as Minamoto no Yoritomo and Oda Nobunaga actively encouraged Sumo and Sumo matches were held frequently in the presence of the Shogun. It is believed that the role of the Sumo referee emerged during such matches.

Modern day Grand Sumo Tournament has its origins in the fund-raising tournaments held in shrines and temples during the Edo period. Visitors to the Tomioka Hachimangu Shrine can see numerous stone monuments to Sumo. Sumo Kaicho was established during the Edo period and developed into the Japan Sumo Association as the organization expanded, leading to what is now called the Grand Sumo Tournament.

- For information regarding national sports, go to:  
<http://ja.wikipedia.org/wiki/%E5%9B%BD%E6%8A%80>
- For information regarding Sumo, go to:  
<http://en.wikipedia.org/wiki/Sumo>
- For documents in relation to the Sumai-no-Sechi Kai, go to:  
<http://www.ep.sci.hokudai.ac.jp/~tsubota/chrono/chrono.html>
- For Sumo history, go to:  
<http://beemanet.com/essay/sumo/index.html>

While many people first think of the *dohyo*, or Sumo ring, when Sumo is mentioned, the round-shaped *dohyo*

that serves as the boundary to determine victory during a match was not established until the Edo period. The *dohyo* of the Edo period had a diameter of 13 *shaku* (3 m, 94 cm) and this size was enlarged by 61 centimeters at an Emperor's Sumo match on April 29, 1931 to the current diameter of 15 *shaku* (4 m, 55 cm). The Japan Sumo Association stated that the reason for enlarging the size of the *dohyo* was, "to allow the best part of Sumo, the unique winning techniques that occur in the flash of an eye, to be seen a little bit longer."

- For information regarding *dohyo*, go to:  
<http://ja.wikipedia.org/wiki/%E5%9C%9F%E4%BF%B5>  
<http://www.tangoll.com.hk/Sumodohyo.html>

No one would disagree with the fact that live broadcasts of Sumo and professional wrestling played a part in the spread of television sets. One reason for this is that the size of the television screen in the early days was a perfect match for capturing the full impact and excitement of bouts occurring in the *dohyo* or ring.

By the way, do you know why the wrestling ring is referred to as a "ring" when it is actually square-shaped? Originally, the area used for wrestling and other hand-to-hand fighting sports was bordered by ropes that were held by the surrounding spectators so that the fighters could not escape, and since the shape of this area was circular, it was called a "ring".

- For information regarding the history and diffusion of television, go to:  
<http://www.f-ncv.org/ncv/rekishi.htm>  
<http://www.tku.ac.jp/~juwat/tv-sports.pdf>
- For information regarding the types of wrestling and their history, go to:  
[http://ja.wikipedia.org/wiki/%E3%83%AA%E3%83%B3%E3%82%B0\\_\(%E6%A0%BC%E9%97%98%E6%8A%80\)](http://ja.wikipedia.org/wiki/%E3%83%AA%E3%83%B3%E3%82%B0_(%E6%A0%BC%E9%97%98%E6%8A%80))  
<http://en.wikipedia.org/wiki/Wrestling>
- For information regarding the types of boxing and their history, go to:  
<http://en.wikipedia.org/wiki/Boxing>

This discussion may make many people think of the titles of the Koji Suzuki trilogy, Ring, Spiral and Loop that were made into movies and TV shows. However, for engineers grappling in the EMC *dohyo*, Ring, Spiral and Loop bring to mind the shapes of antennas and coils, and it may be intimately familiar to compare them to electromagnetic field models. For example, recently the use of non-contact IC cards (or "smart cards") to make credit card forgery more difficult has spread rapidly with a loop antenna built into the IC card for the data transceiver and the working voltage supply port of the IC, and the toroidal coil that we use for noise filters is called a ring coil. Research and experimental devices using synchrotrons for charged-particle acceleration consist of literally giant-sized rings.

- For information regarding synchrotrons, go to:  
<http://www.kek.jp/kids/accelerator/index.html>

Engineers working in the EMC field should not only rely on the quick fixes that are commonly referred to as *ex*

*post facto* measures such as wrapping various amounts of interface cable on a toroidal core, but rather we should be striving daily to refine numerous techniques that should be incorporated in previous planning such as component layout, multilayer plate power source and gland layer layout, as well as pattern planning.

- For information regarding IC cards and loop antennas, go to:

<http://img.jp.fujitsu.com/downloads/jp/jmag/vol56-4/paper10.pdf>

[http://www.its-lectures.ae.keio.ac.jp/2003/2003\\_b\\_5e.pdf](http://www.its-lectures.ae.keio.ac.jp/2003/2003_b_5e.pdf)

- For information regarding Koji Suzuki and his novels Ring, Spiral and Loop, go to:

<http://www.fujitv.co.jp/jp/kumorepo/ringiv/world.html>

<http://www.alles.or.jp/~kamiya/Column/mitu09.html>

<http://www.theringworld.com/books.php>

- For information regarding the Sumo winning techniques, go to:

<http://sumo.goo.ne.jp/kimarite/index.html>

<http://sumo.goo.ne.jp/eng/kimarite/index.html>



Sumo Yokozuna ("Grand Champion") stone monument in Tomioka Hachimangu Shrine



Four posts (for the four directions) and a roofed *dohyo*



Nobuhiko Tsunefuka

1943 Born in Tokyo

1968 Graduated Osaka University School of Engineering Science

To 1984 Engaged in development of IT equipment at Hitachi Ltd.'s Taga Plant

1991 onward Engaged in electromagnetic environment related education at Hitachi Technical College

1999 onward Planning Manager at Hitachi Technical Research Institute

2006 onward Ability InterBusiness Solutions, Inc. Tokyo Branch