A Series of Steel Artwork: “Place and Space” by Makoto Ito
Can the sculptures find their address? In various places; From empty space.

“New Moon in Summer”
This is the new moon that lay out of sight during winter.
(Reinforced concrete; 500×1,000×600; Photographed in 2000 in Niigata by © Anzai)

Makoto Ito: Born in 1955, this artist graduated from the Sculpture Program of Musashino Art University in 1981. He then entered the graduate program in Art and Design at the same university, which he completed in 1983. He participated in the Triangle Artist Workshop in New York with a grant from the Asian Cultural Council in 1993 and was then dispatched to England by the Agency for Cultural Affairs for its program to train artists overseas. In 1999, he assumed the position of professor, Sculpture Program, College of Art and Design, Musashino Art University.

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Kamaishi: Birthplace of Modern Ironmaking in Japan

The Light of Product Making Will Keep Alive Forever

On December 1, 1857, Takato Oshima, the father of modern ironmaking in Japan, was the first in the nation to successfully tap iron using a western-style blast furnace at Kamaishi. December 1, 2007 will mark the 150th anniversary of his achievement. Over the years, the ironmaking gene that originated in the late 19th century was transmitted from the Kamaishi area (including the current Kamaishi Works of Nippon Steel) to the state-owned Yawata Steel Works (established in 1901 and currently the Yawata Works of Nippon Steel) and then to today’s Nippon Steel. The gene of ironmaking observed at Kamaishi continues to support the development of Japan’s manufacturing industry and its economy and plays an integral role in “industrial collaboration,” a source of strength for the nation’s manufacturing industry.

The current issue highlights the 150-year course of iron- and steelmaking at the Kamaishi Works.
Modern Ironmaking Originated at Kamaishi

Japan's traditional tatara ironmaking method used iron sand as a raw material and was practiced for many centuries in Japan. The pig iron produced by this method was the source material for the iron used in reverberatory furnaces and in cast iron guns intended to defend the country against growing international threats at the end of Edo era (mid-1800s). This ironmaking method, however, was associated with problems like the frequent occurrence of cracking in gun barrels and begged for a method of manufacturing higher-quality pig iron. Takato Oshima, a samurai (warrior) from the Nanbu domain (located in northern Honshu, Japan's main island) was invited by the Mito domain (northeast of modern-day Tokyo) to serve as an engineer in its gun casting operations. He became keenly aware of the need for a western-style blast furnace to manufacture better-quality pig iron. Because of this, he set out to build and operate a blast furnace at Ohashi in the Nanbu domain (Ohashi in present-day Kamaishi City).
All of Ohashi and the Kamaishi area, being rich in iron ore deposits, provided an extremely good location for iron and steel production. Local advantages included the Hashino River with a current sufficiently strong to drive water wheels, a deep forest capable of supplying vast amounts of charcoal for fuel, and the availability of plentiful labor in the surrounding area.

On December 1, 1857 (or, January 15, 1858, according to the newer solar calendar) and after overcoming many difficulties, Takato Oshima successfully tapped molten iron from Japan’s first western-style blast furnace. Later, the Nanbu domain built a total of ten blast furnaces in Kamaishi. Of these, the Hashino No.3 blast furnace continued in operation for 36 years.

In 1880, about a dozen years after the Shogun relinquished his powers to the Emperor in what is known as the Meiji Restoration, the state-owned Kamaishi Ironworks started operations. The government turned down a proposal submitted by Takato Oshima to begin with a limited number of small blast furnaces that would be incrementally increased to five units. Each unit would have a daily capacity of 10 tons that together would eventually total 50 tons. Instead, the government adopted a plan proposed by a foreign engineer to begin by building two large (25-ton capacity) blast furnaces. But, this project ended in failure just two years later.

In the following years, the ironmaking equipment and facilities of the Kamaishi Ironworks were sold off to the private sector, specifically Chobei Tanaka, the head of a Tokyo-based iron merchant. Agreeing with Takato Oshima’s idea of starting with a moderately-sized operation and gradually enlarging it, Chobei Tanaka joined with Kyutaro Yokoyama to build small blast furnaces. On October 16, 1886, in their forty-ninth blowing-in attempt, they finally succeeded in the continuous tapping of molten iron.

1857: Takato Oshima successfully taps iron for the first time in Japan using a western-style blast furnace at Ohashi on December 1.
1880: The state-owned Kamaishi Ironworks starts operation.
1883: The state-owned ironworks is discontinued.
1885: The state-owned ironworks is sold off to Chobei Tanaka, who rebuilds the works as a privately-owned ironworks.
1886: On the forty-ninth blowing-in attempt, Chobei Tanaka succeeds on October 16th in the continuous tapping of iron.
1934: Japan Iron & Steel Co., Ltd. is formed through the merger of Yawata Steel Works with other steelmaking companies.
1950: Japan Iron & Steel Co., Ltd. is dissolved to form Yawata Iron & Steel Co., Ltd. and Fuji Iron & Steel Co., Ltd. The Kamaishi Works becomes one of the steelworks belonging to Fuji Iron & Steel.
1970: Yawata Iron & Steel and Fuji Iron & Steel merge to form Nippon Steel Corporation.
Advanced Technology Comes into Play on the Global Stage

The Kamaishi Works has been the traditional heir to the “gene of product making” and has supported Japanese industry through the Meiji, Taisho, Showa, and Heisei periods. Since the start-up of a wire rod mill in 1961, the works has continuously updated and reinforced its equipment and is now a supply base for world-class wire rods used in steel tire cord.

Steel cord consists of steel wire rods used as a rubber-reinforcing material to increase the durability of radial automobile tires. Compared with conventional tires made using nylon alone, these radials provide improved safety and fuel efficiency. The steel cord produced at the Kamaishi Works garners high acclaim for being of the highest quality and solidifies Nippon Steel’s position as a leading supplier of steel cord both in Japan and elsewhere.

On top of this, the Kamaishi Works manufactures high-carbon steel wire rods, including steel wire for bridge building (e.g., wire used in the main cables of the Akashi Kaikyo Bridge, the world’s longest suspension bridge); wire rods for PC steel bars; wire rods for special welding; wire rods processed with cold heading and cold forging (CII) to form bolts, including important automobile parts; and low-carbon wire rods.

Besides steelmaking operations, the Kamaishi Works in 2000 put into commercial operation an IPP plant that capitalizes on the works’ power generation technology and related infrastructure. As a single thermal power plant with the largest output capacity in Iwate Prefecture, the Kamaishi IPP plant supplies 149,000 kW of electricity (equivalent to the consumption of about 50,000 households) to Tohoku Electric Power Co., Ltd. The plant assumes responsibility for supplying nearly 30% of all the power provided by the electrical power company to Iwate Prefecture.

As a steelworks that is always open to the local community, the Kamaishi Works aims to build closer ties with the surrounding community and to prosper with it, through the active participation of local residents in the works’ regional events and sporting activities, like those of the Kamaishi Sea-waves RFC (rugby team).
When the train stops at Kamaishi Station and visitors take their first step or two outside the station house, they see before them a large-scale steelmaking plant and several smokestacks, as well as two blast furnaces to the side of the steelmaking plant. All elderly people who have visited Kamaishi recall this scene in the same way.

In 1988, however, the two blast furnaces were shut down, and now the previous view no longer exists. But, by conducting visits to the steelworks and holding courses on steelmaking and by allowing people to experience tatara, Japan’s traditional method of ironmaking, we hope to join with local citizens in learning about the history of Kamaishi and the goals of those who, over a period of a century and a half, devoted themselves to making iron there. Further, we hope to aid in making children more familiar with steel and with the steelworks and to help in nurturing a love for their community.