

The Comparison of Current Conservation efforts between Shuijinjiu Historic Mining Site at Jinguashi area, Taiwan and Iwami Ginzan Silver Mine Cultural Heritage in Japan

Sheng-Fa Hsu and Yu-Sian Yu

Abstract

The rise and fall of industrial settlements have much to do with changes in people's lifestyle, and consequential development of historic sites suggests the ways people regard the past. The ShuiJinJiu historic mining site is an important remainder of the mining industry of Taiwan in the early years. Having undergone the startup, prosperity and decline of the mining industry, with culture tourism as the key development trend in recent years, the ShuiJinJiu mining site was nominated as a potential world heritage site in Taiwan and took a turn for new developments. However, whether this new opportunity is to become a sustainable development for the site is what we should focus on in the future.

This study attempts to compare the current conservation state of the Iwami Ginzan Silver Mine in Japan with ShuiJinJiu historic mining site in Taiwan, and explore various possibilities of more sustainable development potentials from the perspective of cultural value and conservation development, hoping to provide reference for subsequent conservation development in related industries in Taiwan.

Keywords: ShuiJinJiu historic mining site, Jinguashi, Iwami Ginzan Silver Mine, industrial heritage, conservation development

I. Introduction

During the eighteenth and nineteenth centuries, increased energy efficiency in the United Kingdom had initiated the Industrial Revolution, causing changes to how objects are manufactured and how resources are mined. Machine-based mass production has replaced handicraft-based limited production, inducing social, economy, scientific, and technological reforms. Therefore, societal people have entered an era of vigorous development. However, following the mid-twentieth century, global concerns have successively arisen such as climate changes, industrial transformation, oil and energy depletion, and renewal of production technology. Consequently, several outdated industrial processes were eliminated, and numerous production facilities and large factories were removed and abandoned. As human history progresses, the remnant factories and equipment are considered to be crucial industrial heritages manifesting the historical context of industrial development and the interaction between humans and the environment. These industrial heritages have gradually reduced in quantity as relevant industrial facilities advance; therefore, topics regarding heritage conservation have garnered increased attention. In 1973, the *First International Conference on the Conservation of the Industrial Monuments* was held for promoting the conservation of industrial heritages and landscapes within international societies. This conference led to the formal establishment of the International Committee for the Conservation of the Industrial Heritage (TICCIH) in 1978, which became the official consulting organization for registering and reviewing industrial heritages.

To date, industrial heritage conservation institutions or organizations have collectively discussed in international conferences how existing industrial heritages should be conserved and developed. In 2003,

the TICCIH held the Twelfth International Congress in Russia, approving the *Nizhny Tagil Charter for the industrial Heritage*, which delineates the value and definitions of industrial heritage and describes how industrial heritages are conserved. Subsequently, the *ICOMOS-TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes* were adopted by the Seventeenth ICOMOS General Assembly in 2011. These principles posit that industrial heritage consists of sites, structures, areas, and landscapes and outline methods of recording, protecting, and maintaining industrial heritages, thereby providing additional information that further enhances citizens' cognition and knowledge of industrial heritages. In 2012, the Fifteenth TICCIH General Assembly was held in Taipei, Taiwan, during which the *Taipei Declaration for Asian Industrial Heritage* was approved. Following the spirits and foundations of international charters and conventions, the declaration based on Asian industrial heritage proposes the following: 1) using conservation strategies at international, national, and local levels is necessary; 2) industrial heritage in Asia should be broadened to include technology, machinery and producing facilities, built structures and built environment of pre-industrial revolution and post-industrial revolution periods; 3) industrial heritage is the comprehensive cultural landscape that reflects the interactions of humans and the land; 4) adaptive reuse of industrial heritage for a new function as a conservation strategy is accepted but should not be achieved at the sacrifice of the universal value and core value of the world's industrial heritage; and 5) the participation and engagement of local people should be encouraged to sustain the overall conservation of industrial heritages.¹

In this paper, we focused on the Jinguashi area, one of the heritage sites of the Shuei-Jin-Jiou Mining

¹ Source from http://ticcih.ss.mtu.edu/public/docs/TaipeiDeclaration_ch.pdf on July 16, 2014.

Sites that were selected as the potential world heritage sites in Taiwan, and compared this area with the Iwami Ginzan Silver Mine Cultural Heritage, also a mining industrial heritage. The comparison involved analyzing the assets, current situations regarding conservation, and developmental conditions of these two areas to determine the restrictions and possibilities of sustaining the development of Jinguashi. The results can be provided as a reference for promoting the conservation of industrial heritages in Taiwan.

The Iwami Ginzan Cultural Heritage² located in Omori-cho Oda City of the Shimane Prefecture was added to the World Heritage List in 2007 by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The Shuei-Jin-Jiou Mining Sites³ in the northeast area of Jiufang District in New Taipei City, Taiwan were selected as Taiwan's potential world heritage sites in 2003. Both Iwami Ginzan and Shuei-

Jin-Jiou Mining Sites were relics remained after the termination of the mining industry; the cultural values of these sites encompassed facilities for “production,” “smelting and refining,” “transportation,” and “daily living,” revealing the crucial industrial remnants of the mining industry.

In Taiwan, the mining sites in Shuinandong, Jinguashi, and Jiufen regions were collectively named as the Shuei-Jin-Jiou Mining Sites. Existing historical data on the conservation, current maintenance, cultural resources, and cultural value of the Shuei-Jin-Jiou Mining Sites remain inadequate. To analyze these mining sites, several considerations should be incorporated: 1) UNESCO's international charters regarding the principles for conserving the authenticity (originality) and integrity of industrial heritages; 2) experiences gained in the conservation of cultural heritages listed in UNESCO's World Heritage List; and 3) the range

² Mining, smelting, and refining in Iwami Ginzan of Japan worked between the sixteenth and twentieth centuries. According to the dossier, the Iwami Ginzan Silver bearing seams were discovered by Kamiya Jutei, a merchant of Hakata. Around 1533, a cupellation smelting technique for separating silver and lead was introduced into the mines, dramatically increasing output. Silver production at Iwami Ginzan Silver Mine reached its peak between 1620 and 1640 and declined thereafter. Because mine shafts were dug deeper into the ground, mining works became more difficult and costs of draining water increased, which prompted the termination of silver mining. In 1869, the Silver Mine was privatized; at the time, copper, silver, and gold were smelted and refined. However, because the price of copper dropped after World War I, the mine was forced to close in 1923. In 1942, an attempt was made to reopen the mine to meet the demand for metals during World War II, but this failed because of damages from a typhoon in 1943. The Iwami Ginzan Silver Mine is currently concealed by mountain forests (Data source: <http://whc.unesco.org/en/list/1246/>, from July 15, 2014).

³ According to a Dossier of Taiwan, gold production had existed in as early as 1684, as stated in the quote that “Jingshan is located before Jilongshan (currently, Keelung Mountain) and Sanchaoxi (currently Sandiolling), where gold is the primary product” (Huang, 1995:109). Until 1889, Liu Mingchuan, the governor of Taiwan, initiated the construction of Keelung–Taipei railway lines. When the Badu Bridge was constructed, several workers discovered alluvial gold in the river. Large-scale mining at the Jinguashi region had commenced during Japanese occupation; in 1896, the Tanaka Group gained mining rights and subsequently introduced machines and equipment into mining operations at Jinguashi. In 1904, the discovery of enargite mineral in Jinguashi Mines lead to the establishment of smelting and refining factories at Shuinandong. Subsequently, the Japanese Gold Mining Co. Ltd. purchased the Tanaka firm in 1933, constructing additional mining and smelting factories in Shuinandong (now known as the Thirteen-Level Mining Site). During this period, new mines were discovered, leading to a drastic increase in gold and copper production, which reached a peak in 1938. Following the Pacific War and bombings by the United States in 1943, the Shuinandong smelting factory discontinued its operation. When the Nationalist Government held the ruling power, gold production remained the main mining activity. Later, because of the Korean War in 1950, demands for copper increased, which initiated copper mining in Jinguashi. In the 1970s to 1980s, international copper price drops had rendered Taiwan Metal Mining Corp. incapable of affording its debts and was therefore forced to transfer its mining rights to the Taiwan Power Company, marking the end of Taiwan Metal Mining Copr. in 1987. Because of sulfuric acid leakages and difficulties in mining management, the Jinguashi Mine terminated its operation in 1990.

of “core area” and “buffer zone” based on the current status of heritage conservation. The core area should be able to reflect the values of cultural heritages from the mining industry; if such an area has lost its authenticity, it should be classified as the “buffer zone.” For example, the mining industry in Jiufen closed down in 1971, marking the end of its journey from prosperity to its fall. However, the mining site was revitalized in recent years because of tourism development, but the original atmosphere no longer filled this site because of excessive commercialization. Therefore, the need to conserve this mining site must be reassessed and redefined. In other words, to clarify and redefine the cultural values of the Shui-Jin-Jiou Mining Sites, a comprehensive analysis of existing textual data and the development potential of these sites is required.

II. Cultural Implication

Facing the East China Sea in the north, Jinguashi (Image 1) is surrounded by mountains with Keelung Mountain on the west, Teapot Mountain on the east, and Jingua Mountain on the south. In contrast with the densely populated area, Taipei and Keelung, Jinguashi was a remote mountainous area sparsely populated with people before the development of the mining industry. Most people had lived in the coastal areas where they engaged in fishery activities instead of mining production. Subsequently, the discovery of alluvial gold during the late Qing period evoked people's hope to gain wealth through gold. Therefore, people became attracted to Jinguashi, entering the area to seek for gold in the river. However, only a few people had participated in such activity at the time. Until the Japanese rule in Taiwan, large-scale mining was organized. Consequently, a series of mining operation, an activity in which people interacted with the land, was initiated, leaving mining cultures of both tangible and intangible dimensions to the present day.

A mining industry refers to “business entities engaged in exploration, mining, and auxiliary mining processing and smelting.”⁴ The cultural implication of



【Image 1】 A panoramic photograph of Jinguashi (captured by Sheng-fa Hsu on July 28, 2014)

⁴ According to Article 4 of the Mining Act, exploration refers to exploring for mineral resources and mineral reserves of a deposit and evaluating its economic values, and mining refers to extracting a mineral for its economic and effective utilization.

a mining industry is characterized by the unique lifestyle that people develop in response to environments where mining activities are present. Such lifestyle is created through a sequence of processes whereby humans undertake mining activities (e.g., mining, smelting, and transporting) to resolve environmental problems, and adopt carefully designed, modified, and calculated methods and strategies for mining production (e.g., exploration and mining methods, equipment usage, smelting techniques, suitable transportation routes and means).

According to UNESCO's Operational Guidelines for the Implementation of the World Heritage Convention, the Iwami Ginzan Cultural Heritage and Shuei-Jin-Jiou Mining Sites are classified as the relict landscape of an organically evolved landscape⁵. Relict landscape refers to relics that remain after the cessation of mining works (activities involving people-environment interaction such as mining, smelting, and transportation). This type of landscape should exhibit both tangible and intangible forms of the mining culture. We compared the cultural implications of the Iwami Ginzan Cultural Heritage (Images 2–9) and Shuei-Jin-Jiou

Mining Sites (particularly the Jinguashi region; Images 1, and 10–17). The results are presented in Table 1, which shows that the history of the cultural heritage of the Iwami Ginzan is relatively enriched in terms of depth compared with that of the Shuei-Jin-Jiou Mining Sites. In addition to mining-related facilities and settlements, other historical buildings were identified around the Iwami Ginzan area, such as ruins and Buddha temples. By contrast, the Jinguashi mining area in Taiwan lacked depth in terms of historical development and, therefore, only few facilities and traces of human activities were detected in this area. However, because of frequent population interactions in the Jinguashi mining area over the years, evidences of business management activities remained from the periods under the throne of the Qing Dynasty, Japanese ruling, to the republic government of Taiwan. These governance stages reflect the attitude toward how unique resources were utilized, demonstrating the cultural diversity of industrial heritages. If the characteristics of population interactions are adequately used, the local cultural characteristic unique to the Jinguashi industrial heritage can be portrayed.

⁵ Organically evolved landscape: This landscape results from a spontaneous social, economic, administrative, and (or) religious imperative and has, at the same time, developed its present form by association with and in response to its natural environment. This landscape falls into two subcategories: a relict (fossil) landscape and a continuing landscape. A relict (or fossil) landscape is one in which evolutionary process ended at some point in time, either abruptly or progressively. Its significant features are still visible in material form (Data source: Article 1 of the Convention Concerning the Protection of the World Cultural and Natural Heritage).

【 Table 1 】 The Cultural Value of Japan's Iwami Ginzan Cultural Heritage and Taiwan's Shuei-Jin-Jiou Mining Sites

			Cultural Value	
			Iwami Ginzan Silver Mine	Shuei-Jin-Jiou Mining Sites
Year of Global Recognition			Added to the World Heritage List in 2007	
Area			Core area: approximately 529 ha Buffer zone: 3,134 ha ⁶	
Nationally listed cultural heritage			<p>Encompasses 14 areas:</p> <ol style="list-style-type: none"> 1. Ginzan Sakunouchi (historic site) 2. Daikansho Site (historic site) 3. Yataki-jō Site (historic site) 4. Yahazu-jō Site (historic site) 5. Iwami-jō Site (historic site) 6. Ōmori-Ginzan (Important Preservation Districts for Groups of Traditional Buildings) 7. Miyanomae (historic site) 8. House of the Kumagai Family (Important cultural property) 9. Rakan-ji Gohyakurakan (historic site) 10. Iwami Ginzan Kaidō Tomogauradō (historic site) 11. Iwami Ginzan Kaidō Yunotsu Okidomaridō (historic site) 12. Tomogaura (historic site) 13. Okidomari (historic site) 14. Yunotsu (Important Preservation Districts for Groups of Traditional Buildings) 	
Existing cultural implication	Tangible culture	Mining remnants	Approximately 600 mine wells and tunnels such as the Ryuugenji Mabu ⁸ , Xinqie Mabu, Fukujinyama Mabu, Okubo Mabu Mine Shaft, Kamayambu, Ben Mabu, and Xinhexiang Mabu, including open mine pits and underground tunnels.	
		Smelting remnants	1000 smelting factories (e.g., Shimizudani, Koujidani, Shimogawara Fukiya, eternal smelting factories, and smelting and refining factories in Miyamae areas).	
		Transportation remnants	1. Streets (transport route) a. Iwami Ginzan Kaidō Tomogauradō (Used before the sixteenth century, this road had a length of 7.5 km and width of 0.6–2.4 m. Stone pagodas and small temples of varying themes were built along this road for people to pray for road safety.)	
			<p>Encompasses 5 areas:</p> <ol style="list-style-type: none"> 1. Jinguashi Crown Prince Chalet (municipal heritage) 2. Jinguashi Gold Museum (municipal heritage) 3. Jinguashi Mine roads and bridges (municipal heritage) 4. Shuinandong smelting factory (historical building) 5. Shuinandong tunnel and ropeway system (historical building) 6. Taiyang Ninth Tunnel 	
			<ol style="list-style-type: none"> 1. Mining site relics <ol style="list-style-type: none"> a. Benshan site (open-pit mines) b. Shumei site (open-pit mines) c. Changren site (mineral veins and slags) 2. Tunnels <ol style="list-style-type: none"> a. Jinguashi: Fourth–Seventh Tunnel b. Jiufen: Taiyang Fifth Tunnel 3. Other equipment: air compressor (Jinguashi) 	
			<ol style="list-style-type: none"> 1. Shuinandong smelting factory (Thirteen-level mines) 2. Exhaust pipe 3. Ore mixer 4. Jinguashi Mine roads and bridges 5. Yinyang Sea (due to copper sediments) 6. Golden Waterfall 7. Lian-tong Creek 	
			<ol style="list-style-type: none"> 1. Mining transport roads (mostly destroyed or disappeared) <ol style="list-style-type: none"> a. Relics of aerial ropeways and machine rooms in Benshan area. b. Yinyang Sea transport-use tunnels c. Benshan ropeway systems at Shuinandong d. Sixth Tunnel ropeway relics e. Jiufen tunnel entrance (mine cart railway site) 	

⁶ Data sourced from <http://whc.unesco.org/> on July 16, 2014.

⁷ Data sourced from the Potential World Heritage Website of the Bureau of Cultural Heritage (<http://tw18.boch.gov.tw/index06.htm>) on July 16, 2014.

⁸ "Mabu" means a mine tunnel.

【 Table 1 】 The Cultural Value of Japan's Iwami Ginzan Cultural Heritage and Taiwan's Shuei-Jin-Jiou Mining Sites

Cultural Value		
Name	Iwami Ginzan Silver Mine	Shuei-Jin-Jiou Mining Sites
Transportation remnants	<p>b. Iwami Ginzan Kaidō Yunotsu-Okidomaridō (Used after the sixteenth century, this road had a length of 12 km and width of 0.8–3.3 m. Stone pagodas and stone Buddha statues were constructed along this road for people to pray for road safety.)</p> <p>2. Ports (Transit ports)</p> <p>a. Tomogaura (Used before the sixteenth century, the port exhibited signs left by ships docking at the port, as well as the presence of water-supply facilities.)</p> <p>b. Okidomari (Used after the sixteenth century, the port exhibited signs left by ships docking at the port and military sites on hills.)</p>	<p>2. Transportation route</p> <p>a. Jinshui Highway (to Bachimen port)</p> <p>b. North Coastal Highway (to Bachimen port) and tunnels</p>
Daily life facilities	<p>1. Settlements</p> <p>a. Ruling center: Daikansho Site</p> <p>b. Castle sites: Ginzan Sakunouchi, Yataki-jō Site, Yahazu-jō Site, Iwami-jō Site, Monoiwazujo Castle Site, Yamabukijo Castle Site, Kushijimajo Castle Site, and Unomarujo Castle Site</p> <p>c. Settlements in mining areas:</p> <p>i. Omori-Ginzan Preservation District for Groups of Traditional Buildings (including House of the Kumagai Family, Takahashi House, Abe-shi, Muneoka House, Kanamori House, Aoyama House, Kawashima House).</p> <p>ii. Yunotsu (Important Preservation Districts for Groups of Traditional Buildings).</p> <p>2. Religious buildings</p> <p>Approximately 70 shrines and temples such as Kiyomizu-dera, Anryouji, Gokurakuji, Saishouji, Saishouji, Rakan-ji, Kanzeonji, Shengyuan Temple, Rongquan Temple, Toyosaka Shrine, Sahimeyama Shrine, Well Shrine, City Shrine; 6000 tombstones and monuments such as Okubo Iwami Mamorumaku, Yoshioka Izumo Tomb at the Gokurakuji Site, and Grave of Yasuhara Bicchu; and Rakan-ji Gohyakurakan.</p>	<p>1. Settlements</p> <p>a. Jinguashi settlement:</p> <p>i. Residential area for Japanese citizens (currently the Golden Museum Park): Jinguashi Crown Prince Chalet, Jinguashi Shrine, Siliandong (dormitories for Japanese workers during Japanese rule), and Gold smelting building (originally hotels for foreigners during the Japanese rule).</p> <p>ii. Residential area for Taiwanese citizens: Qitang Old Street, Benshan storage tanks, New Taipei City Guashan Primary School (established in 1909, formerly known as the Jinguashi Senior Elementary School, exclusive to only Japanese children), and New Taipei City Private Shiyu Junior High School (established for children of Taiwan Metal Mining Corp. employees).</p> <p>iii. Other: Cemetery</p> <p>b. Shuinandong settlement</p> <p>c. Jiufen settlement: areas surrounding the office of Jiufen Taiyang Bureau</p> <p>2. Religious building:</p> <p>a. For Japanese people: Gold Shrine</p> <p>b. For Chinese people: Jinfu Gong Temple, Qinfu Gong Temple, Fulian Gong Temple, Fuxing Gong Temple, Shansheng Temple, Qianji Tang</p>
Intangible culture	<p>1. Religious beliefs: Shinto (when Kanayamahiko held mining rights)</p> <p>2. Mining techniques: Cupellation smelting technique was introduced and recorded for reference.</p>	<p>1. Religious belief:</p> <p>a. Japanese people: Shinto (A Gold Shrine was erected to worship the God of Smelting, Ōkuninushi, Kanayamahiko, and Sarutahiko Ōkami).</p> <p>b. Chinese people: Emperor Guanyu, Tu Di Gong, Yama-no-Kami.</p> <p>2. Religious activities: During the Duanwu Festival, “Green Grass Ceremony” was held annually in which apprentices were instructed to pick medicinal plants on the mountain. These plants were then used to produce herbal pills for treating miners who could not afford medical expenses.</p>

【 Table 1 】 The Cultural Value of Japan's Iwami Ginzan Cultural Heritage and Taiwan's Shuei-Jin-Jiou Mining Sites

Cultural Value		
Name	Iwami Ginzan Silver Mine	Shuei-Jin-Jiou Mining Sites
Cultural value	<p>1. The output of the Iwami Ginzan Silver Mine during the Age of Discovery between the sixteenth and seventeenth centuries boosted the exchange between East Asian and European trade and culture.</p> <p>2. A small-scale system for Japanese metal mining industries and production technology was successfully developed and encompassed the entire scope of mining activities, from mining to smelting and refining. The isolation of economic activities from political power during the Edo period hindered Japanese technologies from being introduced into European markets when the European Industrial Revolution had occurred. Furthermore, in the late nineteenth century, silver mine resources started to be depleted, forcing mining activities to be terminated. However, remnants of mining activity in this area have been well preserved.</p> <p>3. Historical remains of silver production, transfer, and transportation were all intact, revealing the entire mining process that had occurred at the time.</p>	<p>1. The industrial heritage and historical culture of Jinguashi settlement exhibited economic, historical, geological, and botanical values. In addition, remnants from Jinguashi comprised human resources (e.g., landscapes, historical space, local customs and ceremonies), natural landscapes (topographical and water landscape resources), and mining sites (mining areas, tunnel openings, mining transportation routes, and smelting facilities). These remains vividly presented the contemporary history of mining industry in Taiwan, fulfilling Item 2 of the world cultural heritage criteria.</p> <p>2. Following the termination of mining operations in recent years, the spatial patterns of settlement lifestyle gradually became indistinguishable. A portion of the settlement landscape such as the dormitories for Japanese senior employees was eradicated after years of abandonment. Areas where miners had lived house Western-style buildings, which do not match with the existing spatial environment. In addition, the cableways and ropeways that were once the main means of transportation for Jinguashi miners had been irrevocably removed after the mining industry had ceased operation. In response to the current rapid socioeconomic development, Jinguashi settlement is now extremely vulnerable, satisfying Item 5 of the world cultural heritage criteria.⁹</p>

⁹ Data sourced from <http://www.boch.gov.tw/boch/> on July 20, 2014.



【Image 2】 Entrance to the Ryuugenji Mabu at the Iwami Ginzan Silver Mine
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 3】 Interior of the Ryuugenji Mabu
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



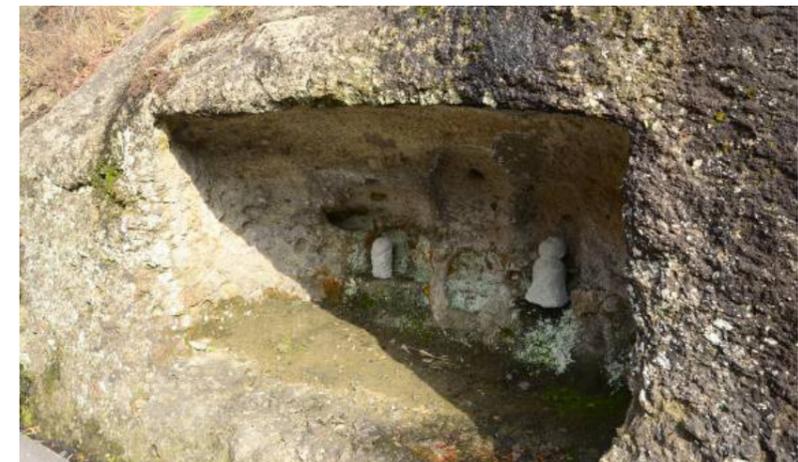
【Image 4】 Remnants of the Shimizudani smelting factory at Iwami Ginzan
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 5】 The Rakan-ji Gohyakurakan at Iwami Ginzan
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 6】 The Okubo Iwami Mamorumaku tombstones at Iwami Ginzan (Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 7】 Numerous stone Buddha statues along the road of Iwami Ginzan
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 8】 One of the Preservation Districts for Groups of Traditional Buildings
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image 9】 Settlement landscape at Iwami Ginzan
(Photo captured on January 2, 2014 by Sheng-fa Hsu)



【Image10】 Siliandong at Jinguashi
(Photo captured on June 30, 2014 by Sheng-fa Hsu)



【Image 11】 Gold Refining Building at Jinguashi
(Photo captured on June 30, 2014 by Sheng-fa Hsu)



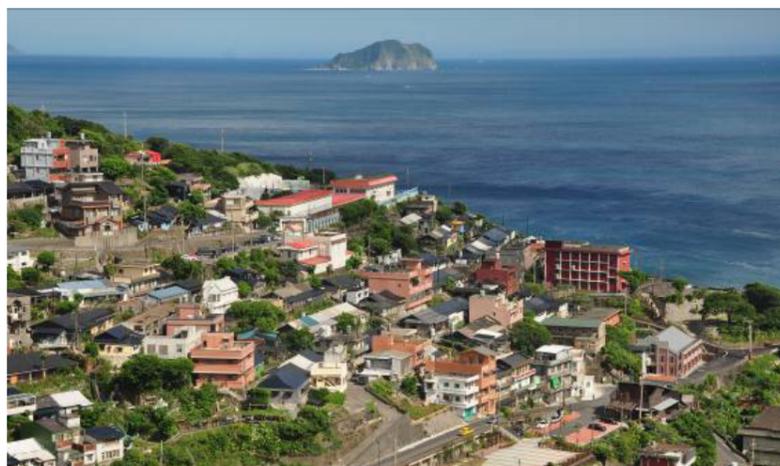
【Image 12】 Jinguashi Crown Prince Challet
(Photo captured on October 29, 2014 by Sheng-fa Hsu)



【Image 13】 Jinguashi Shrine
(Photo captured on July 24, 2014 by Sheng-fa Hsu)



【Image 14】 Shuinandong Smelting Factory at Jinguashi
(Photo captured on July 24, 2014 by Sheng-fa Hsu)



【Image 15】 Shuinandong settlement at Jinguashi
(Photo captured on July 24, 2014 by Sheng-fa Hsu)



【Image 16】 New facilities built to cover the opening of the Fifth Tunnel of Benshan at Jinguashi
(Photo captured on June 30, 2014 by Sheng-fa Hsu)



【Image 17】 Cement-made facilities showing how mismatched the overall appearance seemed due to the use of cement with the original stones.
(Photo captured on June 30, 2014 by Sheng-fa Hsu)

III. Current Status on the Preservation and Conservation of Industrial Heritages

1. Cultural Heritage

1.1. Iwami Ginzan Silver Mine

Currently, Iwami Ginzan is classified as a relict landscape. The Agency for Cultural Affairs in Japan categorized Iwami Ginzan Cultural Heritage according to its cultural values and preservation status into nationally designated Important Cultural Property and city designated Important Cultural Property. This heritage site remains perfectly intact as it appeared back in the days, clearly showing traces of mining, smelting and transportation activities. Moreover, approximately 600 mining wells and pits, and relics of 1000 smelting factories, two transportation routes, and two transit ports remained. Local residential facilities were also well preserved, including traditional residential houses, functional buildings (e.g., post offices and retail stores), and religious buildings (e.g., shrines, temples, stone pagodas, stone Buddha statues, tombstones, and monuments). Objects remnant from mining processes were found such as devises, books, and paintings, illustrating the entire historical development of the mining

industry. Regarding actual maintenance, because the mining industry had ceased operation, numerous types of production equipment for excavating grounds were removed. Therefore, most remnants were preserved, adding only necessities such as interpretation boards and road signs. Residential facilities for everyday use such as houses and religious buildings were continually renewed and renovated because people still opted to reside in these dwellings. In addition, local residents spontaneously believed that they should maintain their traditional environments and, therefore, were able to retain the primitive atmosphere of the environment throughout the process of modernization. Consequently, a visual landscape free of temporal and spatial intertwinement was retained.

1.2. Jinguashi

Although the Shuei-Jin-Jiou Mining Sites in Taiwan were chosen as the potential world heritage site, only five buildings were designated as cultural heritage according to the Cultural Heritage Preservation Act of Taiwan, receiving legal protection. Nevertheless, after the cessation of mining operations, numerous production and transportation facilities were exterminated

such as cable railway, aerial ropeway, and the railway from Jinguashi to Bachimen port. In addition, political rulers of varying periods had eliminated several buildings due to policy considerations; for example, the Jinguashi Shrine (Image 13) was perceived to symbolize Japanese colonizers by the Nationalist Government and was therefore exterminated. In other words, the mining landscape of Jinguashi at the present day is a relict landscape that contains only remnants of mining activities (mining sites, pits, and tunnels) and smelting facilities (e.g., Thirteen-level smelting factory, exhaust pipe, Golden Waterfall, and the Yinyang Sea). Only a few routes used for mining transport remained from the early days (e.g., the Jinshui Highway and North Coastal Highway), and most miners had left the area when the mining industry declined, resulting in population loss and increased aging population in this area. Several places in Jinguashi gradually became bleak and desolate (Image 15) such as the Shiwei District¹⁰. To date, only Jinguashi, Shuinandong, and Jiufen remain. Building structures had also changed from using wooden roof lined with asphalt felt paper to bricks and reinforced concrete. Regarding maintenance, after establishing the Gold Museum, the government subsequently renovated and embellished mining relics in a stage-wise manner. However, during this process of renewal, new facilities may pose a threat to mining relics. For instance, the Fifth Tunnel of Benshan at the mining production area and the mine cart railway are areas where tourists could personally experience the atmosphere of a mining tunnel; however, newly built structures at the site blocked the view of the old spatial patterns (Image 16), forming a cluster of both old and new sceneries. A large piece of glass is erected at the site, which elicited doubts about whether this structure is suitable or ecofriendly for this area (e.g., birds might collide into the glass and die, particularly migratory species that are unfamiliar with the terrains in this

area). Furthermore, the stone walls surrounding the dormitory that was previously built for Japanese workers were incorporated with cement structures for various reasons (Image 17), forming a mismatched combination of structural materials. Such a design method may curtail the cultural values of the heritage site and, thus, might require reconsideration in the future.

2. Establishment of Private Organizations for Conservation Efforts

Regarding recent promotions of conservation efforts, local residents of Iwami Ginzan area in Japan had established an organization in 1957 for promoting the cultural properties of Omori-cho. When the Japanese government finally had the intention to register Iwami Ginzan as a world heritage, government officials began to intervene in 2001, establishing the “Shimane Prefecture Cultural Property Office for Promoting World Heritage Registration.” Concurrently, they cooperated with private organizations to continually protect and promote heritage sites. Moreover, at Jinguashi, local residents endeavored to boost the local economy by orienting toward tourism development beginning in early 1995. Subsequently, tourism promotional associations were established. However, because of land and funding shortages, which hindered comprehensive planning efforts, cultural tourism development was slow at first. Only until late 2003 when Jinguashi was nominated as Taiwan’s potential world heritage did the government officials demonstrate active attitude toward promoting cultural heritages. In 2004, the public sector introduced the concept of an ecological museum, subsequently establishing the Gold Museum that comprises the mining areas and dormitory facilities that were built for Japanese workers. The Gold Museum also served as the base area where cultural properties of Jinguashi are conserved, investigated, and promoted. However, the concept of an ecological museum strongly emphasizes

¹⁰ Shiwei District was the earliest mining settlement established in Jinguashi; because of a shortage of water sources, residents gradually moved down to the foot of the mountain where water source is near. Thus, Shiwei gradually became deserted.

community participation, the level of which is currently low in Jinguashi. Therefore, collaborating with private organizations located in other areas to encourage community empowerment became a topic of focus among business managements.

Comparing Iwami Ginzan and Jinguashi shows that although the cultural heritages of both area were

first preserved through private organizations, the initial ulterior motives of these organizations differed. For Iwami Ginzan, the organizations were dedicated to conserving and preserving the cultural properties of this area, whereas Jinguashi organizations promoted the cultural heritage of Jinguashi to vitalize their local tourism development. In addition, the development orientation of both regions after governmental inter-

【 Table 2 】 A Comparison of Organizations Associated with Japan’s Iwami Ginzan Silver Mine Cultural Heritage and Taiwan’s Shuei-Jin-Jiou Mining Sites

Organization Status ¹¹		
Items	Iwami Ginzan Silver Mine	Shuei-Jin-Jiou Mining Sites
Relevant organizations	1. 1957: Omori-cho Cultural Property Preservation Society (private) 2. 1967: Iwami Ginzan Relic Conservation Youth Group (private) 3. 1986: Omori-cho Preservation Countermeasure Agreement Society (private) 4. 1989: Iwami Local Design Planning Group (private) 5. 2000: Iwami Ginzan Guidance Group (private) 6. 2001 (April): Shimane Prefecture Cultural Property Office for Promoting World Heritage Registration (public) 7. 2001 (April): Daejeon Iwami Ginzan Silver Mine Division (public) 8. 2001: Group for Targeting World Heritage Registration (private) 9. 2006: Iwami Ginzan Relic Preparation and Review Committee (committee) 10. 2008 (February): Iwami Ginzan Fundraising Committee	1. 1995: Juifang Tourism Promotion Association (private) 2. 2004: Gold Museum (public) 3. 2010: Jiufen Mine Cultural Art Foundation (private) 4. 2011: Golden Mountain City Vision Association (private) 5. 2011: New Taipei City World Heritage Promotion Committee (public)
Conservation management and relevant development plans	1. 1962: Investigation on Yamabuki Castle Site (private) 2. 1975: Iwami Ginzan Park Plan (public) 3. 1983–1987: Iwami Ginzan Relic Comprehensive Preparatory Plan (public) 4. 1987: Plan for Omori-Ginzan Preservation District for Groups of Traditional Buildings (public and private) 5. Project of Yunotsu Preservation District for Groups of Traditional Buildings (public and private) 6. House of the Kumagai Family Importance Cultural Property Plan (public and private) 7. Iwami Ginzan Historic Site Preservation Management Plan (public and private) 8. Iwami Ginzan Action Plan (public and private)	1. 2003: Jinguashi Community Industrial Counseling Plan (public) 2. 2010: Taiwan’s Most Crucial Gold Mines: Digital Archiving and Learning of Remnant Geological Property and Mining Activity in Jinguashi and Jiufen (public) 3. 2012: Integrated Plan for Jinguashi Tour Packages (public) 4. 2004: Taipei City Community Planning Design: Creating a Golden Dream in Juifang Jinguashi (public) 5. Flgship Project for Jin-Jiou Sea, Land, Air Tourism City (public)
Laws and regulations	1. Convention Concerning the Protection of the World Cultural and Natural Heritage 2. Cultural Properties Protection Law 3. 2009: Daejeon Landscape Act ¹²	1. Cultural Heritage Preservation Act

¹¹ Adapted from Lu, 2009.

¹² Daejeon was divided into three regions: Iwami Ginzan landscape preserved region; natural environment preserved regions such as Mt Sanbe surroundings and coastal regions; and general regions.

vention differed. Iwami Ginzan was multi-dimensionally developed through collaborations according to the private and public sphere concept. By comparison, Jinguashi heritage site almost completely relied on governmental funding and human resources to conserve this area, preventing local residents (private sphere) from participating in decision-makings, which influenced subsequent conservation planning.

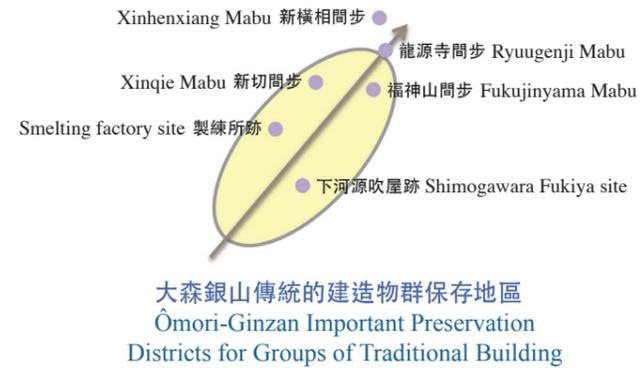
3. Developmental Conditions

Because of cultural and environmental differences (e.g., population, geological properties, topography, climate, and hydrological conditions), the settlement patterns at the Iwami Ginzan Cultural Heritage sites and Shuei-Jin-Jiou Mining Sites developed differently. Such distinct patterns became the key factors for tourism-oriented development in these areas after the termination of mining operations. At Iwami Ginzan Silver Mine, silver was the primary product and gold and copper were the secondary products. The mining production areas were interspersed among the settlement areas. Furthermore, because of its flat terrain, Iwami Ginzan had sufficient hinterland for locals to engage in mining as well as farming, which fulfilled the requirements for a self-sufficient region. Therefore, when mining operations ceased, the residents were still able to make a living through other means. However, over time, problems such as population aging, high vacancy rate, and inactive economic development arose. Since its addition to the World Heritage List in 2007, Iwami Ginzan gradually oriented toward cultural tourism development, which introduced new business opportunities such as jewelry stores that specialize in mining-related silver jewelries or mining lifestyle tourism museums.

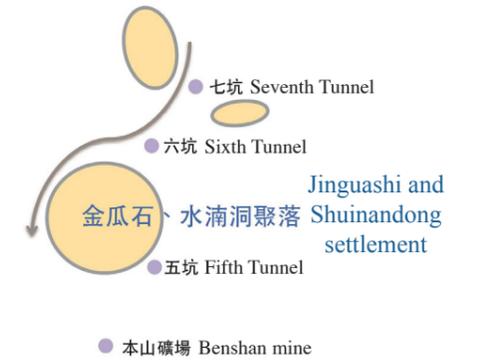
At Jinguashi heritage sites, the primary mining product was initially gold and later became copper. The mining areas were located in a different area to

residential areas, forming a segregated distribution. At the time, Jinguashi lacked hinterlands for other industrial developments, often experiences northeast monsoon climate, and features steep terrains, rendering it unsuitable for farming activities and thus cannot provide a self-sufficient lifestyle to local residents. Therefore, when mining activities discontinued, the peripheral regions of Jinguashi stagnated and gradually declined. In recent years, the public sector had actively steered the economic development of Jinguashi toward cultural tourism, attracting tourists to the mining production areas and Japanese dormitories used in the early periods of Japanese rule. However, crowds cannot be attracted to the original mining settlements and production areas used in the later period, which hindered boosting the local economy. After mining operations had ceased, because other industries struggled to develop further, people of younger generations were forced to seek jobs in the city, leading to population aging problems. Older adults who are left behind cannot sustain cultural and creative development and production related to mining. In addition, because gold is extremely expensive, the threshold for investing in gold-related products increased. The bed and breakfast accommodations, which have gained popularity in recent years, are mostly established by outsiders because of limited funding and differences in investment opinions. Overall, these problems have refrained local residents from being involved in the sustainable development of cultural tourism in Jinguashi.

Iwami Ginzan Silver Mine Cultural Heritage (Interspersion)



Shuei-Jin-Jiou Mining Sites (Segregated lifestyle)



【Figure 1】 A schematic diagram of the mining areas and settlement of Iwami Ginzan Cultural Heritage Sites and Shuei-Jin-Jiou Mining Sites

IV. Conclusion and Recommendations

1. Cultural Value

Compared with Iwami Ginzan in Japan, Jinguashi in Taiwan seemed to lack a rich history of mining development; its cultural value is attributed to gold and copper products that were once produced in this region. Since its rise and fall, the mining industry had lasted only a century. On the one hand, this type of industry demonstrated the diversity of Taiwan's landscape resources, but on the other hand, it also details the vulnerability and limitations of the island's resources. This type of nonrenewable mining resource, once discovered and depleted, can only pronounce its existence through relics of production facilities and human activities. The cultural messages conveyed by these diminishing industrial heritages should be cherished and appropriately preserved and maintained to prevent losing their value. Furthermore, discourses and contemporary interpretation on the values of industrial and cultural heritages must be strengthened to revitalize and conserve these valuable cultural assets.

2. Conservation Development

Presently, Iwami Ginzan is involved in diverse developments. After the cessation of the mining industry, other industrial operations continued, sustaining the development of its peripheral settlements. At the same time, individuals from both private and public spheres are all involved in the recent vigorous development of cultural tourism and conservation efforts. By contrast, the development of cultural tourism at the mining area of Jinguashi seems to be overly financially dependent on the government sector. Despite having the conscious of preserving their cultural heritage, the local residents (private sphere) lacked operating resources and a stable platform for communicating and cooperating with the government. Thus, even a slightest change in policies may return the cultural tourism in Jinguashi into a state of dormancy.

Currently, the cultural heritages located in Jinguashi are preserved and maintained according to the Cultural Heritage Preservation Act, packaged and promoted using UNESCO's world heritage concepts, and managed using the concept of an ecological museum.

Consequently, this site has transformed from being a mining production area to the target of cultural conservation and tourism development, thereby attracting crowds to this once desolated mining area. However, during recent promotional efforts in conserving and managing this heritage site, the primary entity dominating this site gradually transformed from local residents to governmental officials (primary managers) and tourists. The locals have lost their subjectivity amidst the developmental flow of cultural tourism. Therefore, how should a single subjectivity (of only local residents) that once dominated the area transform into a combined subjectivity encompassing those of tourists, the public sector, and local residents is a topic warranting future investigations in the field of sustainable management.

Based on resource characteristics and locations, the resources available in Jinguashi were overly concentrated on mining activities; the geological and climate conditions in Jinguashi are all unsuitable for other traditional industries to survive. Therefore, once mining operations ceased, people who once gathered together for mining purposes dispersed subsequently. In addition, Jinguashi possesses narrow roads, insufficient hinterlands, and steep terrains, all of which are factors impeding population dispersion during the promotion of tourism development. This resulted in several areas to be overly congested and crowded, a phenomenon that is now typical of Jinguashi. Overall, these factors are the inherent geological constraints of Jinguashi limiting future sustainable management. The scope of management of Jinguashi should be expanded for overall planning and adjustment to identify a solution to the aforementioned problems concerning Jinguashi.

Regarding resource maintenance, the cultural values of the industrial heritages at Jinguashi are the

primary source attracting tourist visits. Therefore, resources contributing to this cultural value should be preserved, maintained, and carefully managed to sustain their cultural value. This strategy should be the primary target of maintenance for the sustainable management of Jinguashi.

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