

## 論文の内容の要旨

### Study on the Evolution of a Heritage Tin Mining Town: A Case of Taiping in Perak, Malaysia

(錫鉱山町の遺産としての展開に関する研究 - マレーシア・ペラ州タイピンを対象として)

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Since 1997, UNESCO had recognised industrial heritage site, monuments and properties included mining landscapes or mining regions as the world heritage site (Fleming, 2012). There are 60 protected industrial sites affirmed by UNESCO World Heritage Centre whereas 24 sites nominated as the Mining World Heritage Site. In Malaysia, the tin mining industry is the leading economic sector and became the primary economic generator to the Malaya States in mid-19<sup>th</sup> century. The raw tin material demands from the western country had accelerated tin trades and many tin towns flourishing in Malayan during British colonial era. Therefore, British colonial first intrusion was the Perak Larut War ended with Pangkor Treaty Agreement in 1874s. Meantime, the first tin mining town namely Taiping was gazetted by British purported as the town of eternal peaceful. The first tin ore found in Klian Pauh, Larut district (the 1840s) by a Malay Chieftain, Long Jaafar. Besides Larut, another Kinta Valley districts are the tribute of rich tin producer after Taiping tin exhausted. Both Larut and Kinta district are the principle tin producers in between 19<sup>th</sup> to 20<sup>th</sup> centuries. Both tin fields positioned on the longest and affluent tin belt laid on the west coast of Malaysia. Subsequently, British colonist had overseen the Malay States political and tin economic empowerment by introducing the 'Residency System' (British advisory) and Federated Malay States (FMS). The FMS recognised as 'tin states' embraces Selangor (Kuala Lumpur), Negeri Sembilan, Pahang (Sungai Lembing) and Perak. During the British colonial period, the impacts of tin industrialisation caused to the promptly economic growth, small tin town urbanisation, demographic changed, and the expansion of infrastructure and facilities.

Hitherto, the tin boom has accelerated Perak to become the thriving and well-developed state in Malaysia. Many tin traders are the Chinese merchant from Strait Settlement and European entrepreneur flocked into Perak and other tin states. In the early Larut tin rush era, the Chinese immigrant labours or 'coolies' recruited by the Chinese Kongsis (company) through the contact system. The early tin mining technique was the open-pit mining operated by Chinese tin workers to excavate mining ground by using the hoe. At the beginning of tin mining operation, the manpower subjugated almost eighty percent of the

tin production fees. However, the labour-intensive mining gradually replaced by the hydraulic water jet and gravel pumps until the European corporate introduced tin dredge (in 1930) yet increased tin mass production with less depend on coolies. The tin mining industry essentially manifested the beginning of urbanisation and modernity in the Malay States. Whereas, the tin mining towns centre such as Taiping, Ipoh, and Kuala Lumpur not ordinarily functioned as a tin settlement but also a melting-pot for the plural tin society for structuring the tin mining town. Apparently, British colonial adopted the western urban planning into the Malayan mining town development. Hence, the implication of tin mining town entails the distinctive colonial townscapes and the plural society characters. Malaysia tin mining town assimilated of the 'Grand Modell' (in 1670) colonial town planning initiated the corresponding grid-iron pattern, public square, wide street (thoroughfares), reserved open space, standard-sized and rectangular plots.

Through the literature studies and site survey which had identified the issues of the landscape changed raised by natural processes or human activities stated in Antrop (2008). The landscape alteration could bring either positive development or the divergence deterioration. Therefore, the remnants of post-industrial mining landscapes in Malaysia remained the undulating open ground, sand tailing, open cuts, sand beds and also mining ponds. Further, the landscape modification in Taiping case study caused by the rapid urbanisation had destroyed the tangible relics such as heritage building, monuments and historic landscape. Undeniably, the heritage conservation of tin mining town and industrial heritage is a challenging task for the safeguarding. Moreover, through the theoretical gap verification, mining landscape is not categorised as Malaysia's cultural landscape and the ex-mining site is the lack of integrity mention by Radziah Ahmad (2013). However, the former tin mining town is the concrete evidence to proven the past industrial heritage and the historical attributes. Therefore, the research aim is to determine the evolutionary mining town and the industrial landscape transformation over the time. Additionally, this study is to examine the physical and social heritage transformation validates the interface of tin industrial development, use the land mechanism, urban morphological pattern, historical townscape, plural society composition influential to the tin mining town.

This research is conducted through a case study and supported by the discussion of the comparative tin mining town in Malaysia. Inasmuch, Taiping is selected as the primary case study because (i) the first Tin Township planned by British, (ii) colonial heritage townscape, (iii) the first railroad built in Taiping-Port Weld and (iv) multi-cultural heritage values. The qualitative research method is conducted to investigate the physical spatial and social transformation of Taiping by conducting the literature studies to rationalise research gap and refine research problem. The primary and secondary data were syntheses to justify the key attributes and Malaysia tin mining town characters. This study also included the case of Kinta Valley tin district (including Ipoh, Gopeng, Papan, Kampar, Pusing,

Batu Gajah and Tronoh) and Sungai Lembing underground mining in Kuantan Pahang. In this research, The justification on the significance of tin mining town characters entailed of the most productive mining town (Kinta Valley district), the Eastern Range of underground mining town (Sungai Lembing), and the 'many firsts' heritage mining town (Taiping). Then, all the output data analysed through the descriptive content analysis, mapping and illustration model.

Succinctly, the finding revealed Malaysia mining town transformation began from a temporary mining camp turned into a permanent tin township. The characters of ex-tin mining town identified through the indication factors of (i) geographical setting and historical background (location of the tin belt), (ii) British colonial influences, (iii) socio-economic entities and (iv) multi-ethnic compositions. Thereof, the physical and social factor indicate the attributes of the tin mining town in Malaysia in regards on the similarity and divergence of each tin mining town predominantly in the different spatial pattern, topography location (valley, river and Highland), the colonial townscape and historical elements. Hence, the typologies of tin mining towns in Malaysia are the: (a) tin town built in between river; (b) Tin mining town attached to a hill station; (c) tin town British residency built on the higher ground; and (d) the development of tin mining town centre disparity to typical mining town. Besides those above, the tin industrial infrastructure such as the giant water pipelines in Gopeng, Batu Gajah tin dredge and the longest tunnel of Sungai Lembing mine constituted to the historical townscape of Malaysia mining town

Come across to Taiping, the finding has proven the unique characteristic of tin mining town determined by the colonial town planning and actual townscape possession that distinguish from another mining town. Taiping situated on Larut plains underwent land use changed successions from the existing natural landscape developed into a tin township. Three main zones had built up Taiping tin town congruent with Highland (hill station), the lowland (British administration and Parkland), and the Chinese town (commercial area). Wherein, the spatial pattern of Taiping Township demarcated the separated settlement in between the British colonial quarter and Chinese town directed by the hidden border of the widening street and the large green Lake Gardens. The urban morphology revealed Taiping has driven into rapid development where the first railroad and ancillary social infrastructure have built. Besides, the growth of plural society is clearly seen where the multi-ethnic settlement and social spaces (Little India, the traditional laundry service: Dhoby line and marketplace) formation in Taiping downtown. Especially, the clan association and religious building epitomise the diversity cultural and variance background of each tin society. In comparison to Kinta Valley and Sungai Lembing tin mining towns, Taiping has the proper drainage system to control rainfalls, large green parkland, and the hill station that emphasised 'dual European quarters' built in the same mining town. Therefore, the lake pond diverts the water from Taiping Lake Garden and pass to the town centre. In other words, the Taiping townscape combination of the natural landscape, colonial town planning, and tin infrastructures designated a pleasant and cleanliness

living mining town.

The tangible and intangible heritage again to elucidate Taiping the cohesion of western and eastern cultural interpreted into Taiping townscapes. Whereas, the historic townscape in Taiping manifested the heritage building, grid-iron street pattern, natural feature, and social spaces that increased the visual and accessibility legibility. For example, the Taiping Lake Garden and Larut Hill is the vital natural landmark to indicate Taiping town location. Alternatively, Taiping Clock Tower defined as the visual cue in the position of centre downtown. The formal gridiron street pattern and the short distance old shophouses building blocks (accumulated of ten unit shophouses) proliferate the visual permeability and the accessibility of the heritage tin mining town. The building activities and active building frontage hitherto to improve the visual distinctness of Taiping town such like the Goldsmith shops and pawn shops found at Pasar Road; whereas the furniture shops mainly concentrated at Kota Road. Seemingly, the distinctive historic townscape in Taiping gave a good sensory for walkability and visual indications.

On the other hand, the research finding denoted Taiping Municipal Council mainly focuses on the built heritage conservation stated in the phasing development plan (2008 to 2020). Through the research finding, the implication of Taiping heritage is shaped by the post-colonial heritage, industrial heritage and mining cultural landscape attributes. Therefore, the physical heritage and social entities enormously presented the characteristics of Taiping or another mining town in Malaysia. However, the essential to remain the heritage identity of Taiping town by suggesting the modification of core heritage zone, regional mining landscape conservation, to preserve the linear industrial landscape (railroad), to preserve the historical, social spaces and heritage townscapes. The meaning of Taiping mining town and its industrial heritage characters which are opposition to other World Heritage mining industrial regions. It is because the inadequate physical indication to assess the other industrial, cultural properties in Malaysia where the coolies' lines, tin furnaces (smelting house), the first railroad routes, and the ex-mining site had gone and lack of integrity. In all, this research certifies the ex-mining town in the vitality heritage property to be conserved and protected for future generation. The urban history of Taiping Township remarkable the significant heritage of tin mining town retains the heritage relics of tin industrial heritage and colonial townscape that upkeep from destroyed.

**Keywords:** Tin mining town, industrial landscape, evolution, industrial heritage, colonial, cultural heritage.