Preservation Report of MATSUGAOKA Silkworm House Compound

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Abstract

MATSUGAOKA Silkworm House Compound is located in the area of Matsugaoka Cultivation Site which was once cultivated by about 3,000 Samurai people having changed their swords for ploughs approximately140 years ago. The cultivated area was more than 300 ha where mainly mulberry trees were planted for feeding large quantities of silkworm. Until 1878, 10 silkworm houses were built by the excellent carpenters and 5 buildings among them remain even now being used for some museums or restaurant. Through Meiji to Showa era for about 100 years this facility contributed Japanese silk industry and designated as the National Historic Site in 1989. The top leader was the feudal load of that age and to our surprise, this business community lasts setting the top a direct descendant of Sakai clan. Even now, SAKAI family lives in the close site to the old main castle. It means that the relationship between his family and citizens has been dense since long ago. These conditions must have supported the existence of five big wooden buildings withstanding severe weathering containing deep snow in the winter. We describe how this business community has managed itself and maintained these facilities for 140 years using historical data, charts and our views.

Keywords: silkworm house, SAKAI clan, National Historic Site, business community, the Worth of Maturity

1. Introduction

First, we describe about the elements of real estate phase in this historical spot. Fig.3. Table 1 and Table 2 show the present state of lands and buildings. Though No.26~No.30 do not exist, they were almost the same silkworm houses built during a decade following the completion of former 5 silkworm houses.

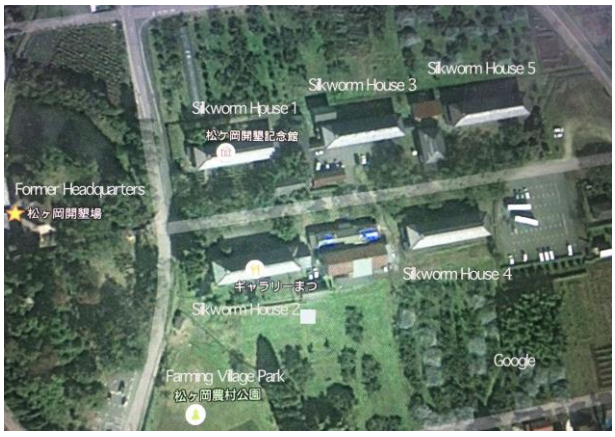

Fig.1. Silkworm House Compound of Matsugaoka Cultivation Site

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As Table 1 and Table 2 show, there are 3 real estate brushes of A, B, C and buildings of No.1~14. in which only No.1~No.6 may be possibly estimated as real estates (5 silkworm houses and Sakai clan silkworm house). But yet regarding other facilities we don't want to get rid of their value because of a long term raison de'tre**.**

Fig.2. South elevation of No.1 silkworm house

About 140 years ago, almost 3000 samurai people cultivated about 300 ha moor of the mountain side of Gassan Mountain into mulberry fields to feed silkworms and at the central zone of cultivated districts, 10 splendid wooden buildings were built. They were named as Matsugaoka Cultivation Site by the last feudal lord of Tsuruoka clan.

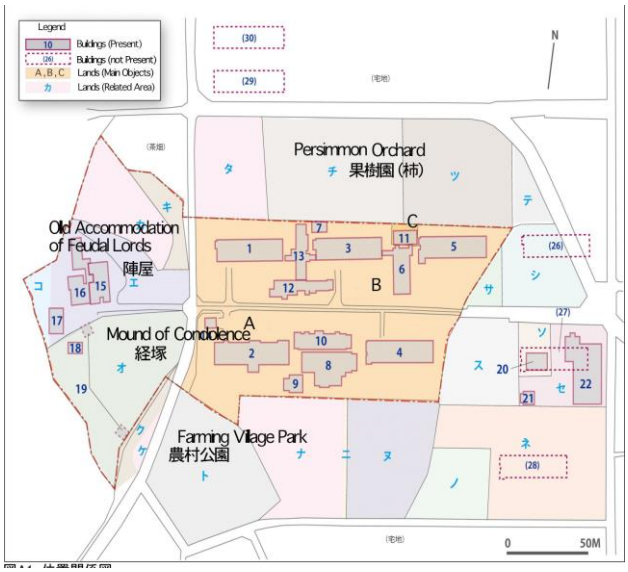

Fig.3. Disposition of buildings and land uses

Table 1. Three rushes where silkworm houses stand

A brush	No.2,4 silkworm house and others stand
B brush	No.1,3,5 silkworm house and others stand
C brush	Small northern land for refrigerator

Table 2. Main Objects in Silkworm House Compound

1. built in 1875	8. Preservation room
2. built in 1875	9. Incubation
3. built in 1876	10. Storing mulberry
4. built in 1875	11. Refrigerator
5. built in 1876	12. Office 1
6. accommodation,	13. Office 2
7. built in 1872	14. Shop

In the beginning, lands of Matsugaoka site were under perfect joint-ownership of about 300 ha. Now, they were divided into individuals, companies and the Private Organization MATSUGAOKA Cultivation Site which consists of 54 houses. But the fundamental soul and framework of this business community still remain as holding 220 ha lands and laying the Sakai clan as a spiritual leader.

2. Features of wooden structure

Each building is the same size in largeness and wooden structure, 3 story building.

No.1, No.2 and No.4 silkworm houses were completed by Master carpenter, Kanekichi TAKAHASHI who made other excellent wooden buildings designated as national treasures such as Old Nishi Tagawa County Hall, Old Nishi Tagawa County Police Station, Tsuruoka Christian Church, Sankyo Storage House Compound in Sakata City and etc..

Table 3. Fundamental data of Silkworm House

longitudinal length		38.22 m (21 Ken *)	
Lateral length		16.38 m (9 Ken)	
1F	floor area	347.8	m2
2F	floor area	347.8	m2
3F	floor area	30.94	m2
Total	floor area	726.54	m2

His skill and sensibility were excellent even in 140 years ago compared with present architectural level.

They have main columns of 230×230mm square section and their spans of central structural face of longitudinal direction are 3640mm and those of perimeter structural face are 1820mm, which are the typical basic module of housings in the eastern part of Japan. The third floor is made for ventilation of silkworm rooms.

Regarding No.1 silkworm house, it has been used without any conversion as it was 140 years ago. But they say that in the beginning of Meiji era, old Samurai people lived in these buildings to feed silkworms and control the inner good condition for them. In the case of No.1, No. 2 , No.4 which were built in relatively early age, some columns of the first floor of south side perimeter zone are eliminated partially for making 3640mm span like the old farmer's houses to get comfortable living condition.

Regarding relatively new No.3, No.5 silkworm houses (completed in 1876), columns and beams having larger sectional size are used. Maximum spans of central structural face of longitudinal direction is 7280mm and look like factories different from No.1, No.2, No.4. Columns are made in octagonal section and their minimum size is 410mm.

Gable roofs are covered with roof tiles sticked by mud. Those roof tiles were once conveyed from the old Tsuruoka Castle which was demolished by Meiji Government order.

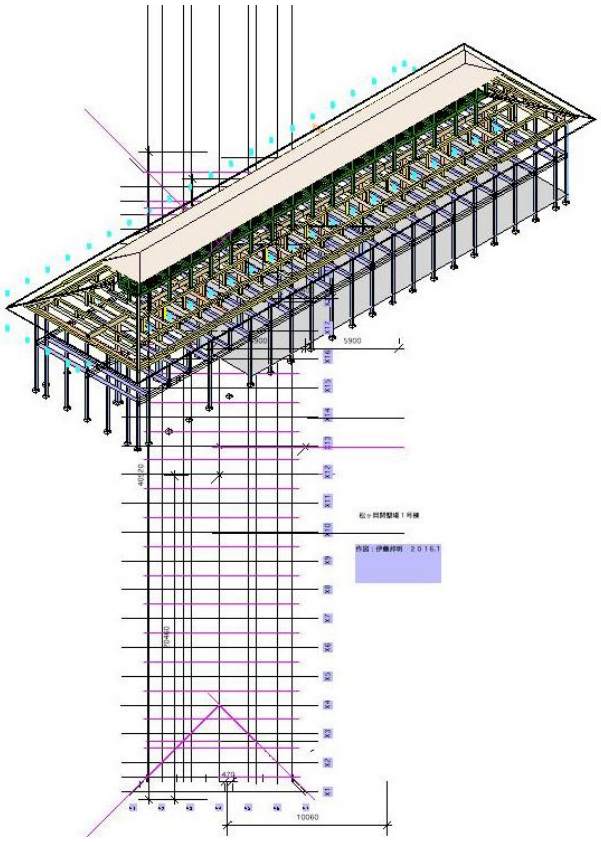
Fig.4. Structural system of No.1 silkworm house

3. Evaluation of cultural assets

When we consider the happinesss of some building, if its possibility given as objective existence was fulfilled through relationship between a building and the people concerned after passing a time, we could praise its role and feel sympathy with satisfaction. We would like to call it the happiness of that building.

[essay1]

This presence shaped through relationship between a building or a land and the people concerned, we define it as the Worth of Maturity [Wm].

[essay2]

We can suggest next 3 types of the Worth of Maturity

A) Affection or Empirical Worth AWm
B) Beauty or Antique Worth BWm
C) Context or Intellectual Worth CWm

The concept of the Worth of Maturity is easy to understand itself in the mutual relationship between a building asset and its estimating subject. On the other hand, when we estimate a building asset in the context of general economical society, the total viewing points are apt to be ignored. The physical degradation by aging and the exchanging worth kept at that time, are only argued. We tried to consider how this increasing worth and the realistic economical principle could be integrated and visualized to deepen the argument as follows.

In Fig. 6. Value for Utilization of a building asset could be defined as a decreasing function V(t) letting Time (t) a variable. In Time t', Value equals Zero and after that point, moves to a deficit phase because of maintenance costs or renewable costs. Finally at the point of Time t_d, this building is regarded to have been eliminated. In this chart, if an estimating subject continues to use this asset consistently, the quantity of integration is, in other words. the quantity of [used = rewarded] merits shows the past accumulation of time and is depicted generally as an increasing function. In the final stage, this Worth changes into decreasing (Fig.8).

This quantity of integration is , to tell by intuition, approximately close to the concept of the Worth of Maturity [Wm] mentioned above in [essay1]. Namely when we image the concept of worth containing integral meaning, the Worth of Maturity in this paper has not contradiction in itself. For that reason, we adopted the word of the Worth instead of the word of the Value and proceed to next phase [essay 3].

[essay 3]

The Worth of Maturity [Wm] is not the same concept as the economical Value V which suggests the fluctuation of economical exchanging possibility. That is the concept that suggests 「irreplaceable worth」 which is close to the quantity of time integration of V

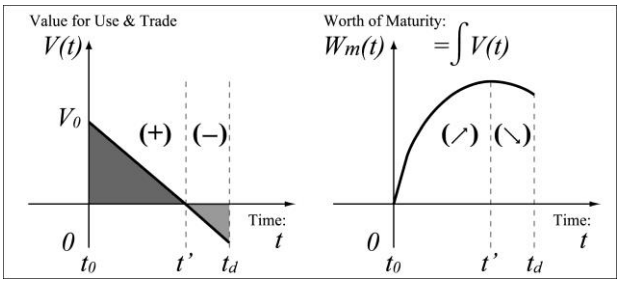

Fig.8. Image chart of the Worth of Maturity based on the quantity of integration of the Value for utilization

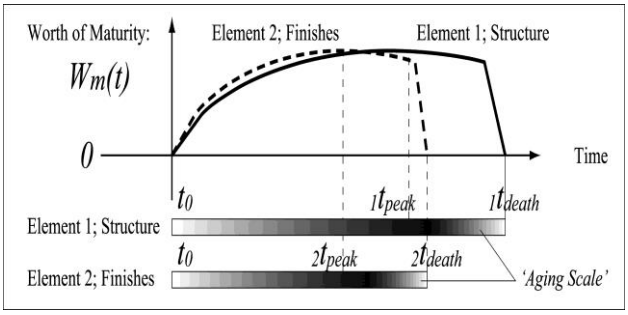

Fig.9.

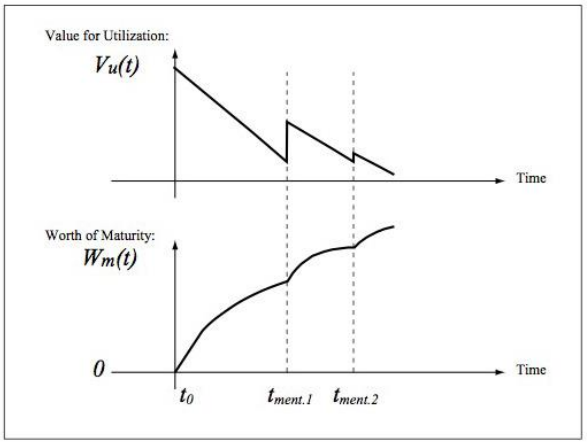

Fig.10.

Basing on that concept we can imagine a function in which the Worth of Maturity [Wm] is a increasing function starting from Wm =0 and vanishes at the time of the elimination of asset.

In the case of building assets which consist of the compounded building elements, it is natural for Wm to be handled according to each element like that the structure could have a long life but the equipment or finishing could have a short life.

To understand the Worth of the Maturity which consists of a lot of building elements intuitively, we showed another chart in which those functions are replaced by the bar-scale with gradation.

In the asset which consist of the building elements having different lives, this chart could become a help to consider about "which part should be admitted as the Worth of Maturity like 『the beauty of a feel』、and how other parts should be estimated.

Fig.10. Curved beam

Fig.11. Drying persimmon

Fig.12. Exhibition room

Fig.13. Suspended furnace

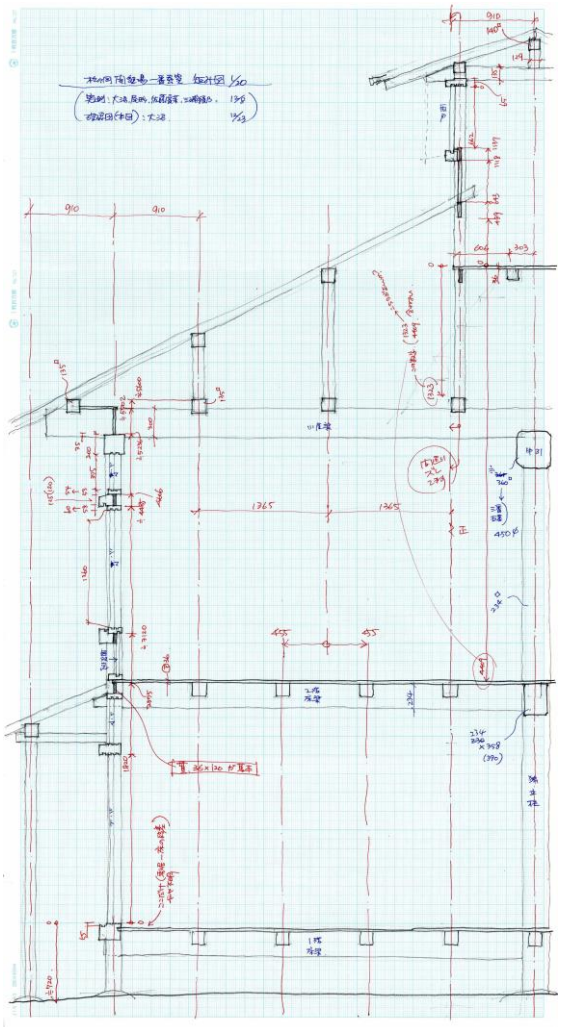

Fig.14. Fundamental detail

Fig.15. A project of Space inserted Museum

3. Conclusions

As reported above, the burden of businesss community exceeded almost 40 million yen in spite of a lot of subsidy from central and local government. To hand these precious assets over to next genarations, there is unreasonableness for present mechanism of society. Almost two decades have passed since two preservation reports were published by authorities, effective ways are not realized yet. Thinking over the change of present society, new ideas and blood should be added with carefully thought-out economical plan and technically back-upped design.

In Japan, the silk industry remains are in the lime light recently by the chance of designation of world heritage of Tomioka Silk Mill. But looking around the world, we could find other good examples such as Lyon-France, Macclesfield-England, Como-Italy, Nantong-China, Paterson-the U.S. where these facilities are used for factories, museums, restaurants, craft-centers and etc. even in our short time survey. Now enlarging the sights, it needs for the people concerned to search for their real condition and communicate with them.

4. Acknowledgement

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5. References

1) Ansho TOGAWA, Takumi SATO and others (1988) Survey of MATSUGAOKA cultural heritage for national designation. Board of Education of Haguro Town in Yamagata Pref.
2) Sadao WATANABE, Shin SATO, Tetsuo TAMAI, Kazuko KOIZUMI and others (1994) Report of Preservation and Use Plan for National Historic Site, MATSUGAOKA, designated by the State.
3) Shozo TAKEYAMA and others (1997) Ryothoshi-A History of Overcoming the Term of Frost-Private Organization Matsugaoka Cultibation Site
4) Matsumura Seminar [Economic Geographical Study of Shonai Plane] 1976 Chiba University of Commerce.
5) Tatsuya KATSUMATA, Shojin KAWAMUKAI (2008) [Composite Elements of Silkworm house] Architectural Institute of Japan
6) Toshiya MIYAZAKI, Takayuki KUROTSU, Bin OHNO, Bushin NISHIKAWA, Hiroshi AOKI, Masao SEKIGUCHI[2013 [Surveying Report of Old House of Yahei TAJIMA] Board of Education of Isezaki City
7) Jun IKEGAMI 2003 [Economy of Culture and Inherent Worth] Iwanami Books
8) Masahiro ONUMA 2012 [The Worth of Maturity of Building Assets] Architectural Institute of Japan
9) Masahiro ONUMA, Kuniaki ITO: The Worth of Maturity in Living Properties; The Image of Heritage: Changing Perception, Permanent Responcibilities, ICOMOS ISC Theory & Philosophy, Florence, 2009
10) Masahiro ONUMA: The Worth of Maturity for the Timber Frameworks in Regional Heritage Houses, ICOMOS+ECOVAST, Rostov the great, Russia, 2010