

Reuse of Bagualing Traditional Old Industrial Buildings Transformed: The Case of the Fungi Culture City in China

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Post 1978 open door policy created a vast industrial boom producing rapid small towns and cities in Pearl river delta of southern China. Shenzhen, the special economic zone(SSEZ) was reformed during this period from a simple small fishing village to a vast socialist economically developed city regarded as “the window of China”. This research aim is to examine the area of Bagualing , one of the earliest built up traditional industrial area in Futian district , Shenzhen and it's transformation and shifting of industries to other areas and thus searching for a solution of social and economic void of this area. Literature review of studying on the history of declining traditional industries, reuse of these industrial buildings have taken places in many ways such as industrial museums, art factories, hotels, shopping malls, but the success of changing are quite few regarding regional planning, human livelihood and also the cost. The methodology of this research is based on physical survey on Bagualing , in Futian district , Shenzhen,China .The result shows that traditional industries along with looking forward to “an adaptive reuse for new point of economic growth” have high potential regarding local productivity. Thus it concludes That refined division of labor, better communication can develop to open the door for a long lasting human settlement in future in these underused areas.

Keywords: Shenzhen, Bagualing, Traditional Industries, Transformation, Adaptive Reuse.

Research Field: Architecture

Introduction:

The concept of adaptive reuse is a strong perception that serves the key concepts of sustainability which is a viable option to avoid demolition waste and redevelopment of existing site. It also extends buildings' life and encourages significant social and economic benefits to the society. Pearl river delta(PRD) is one of the most vast developing regions in southern China.

Now Shenzhen and Zhuhai are the two special economic zones of PRD. From 1978 shenzhen turning from a small fishing village and a sleepy border town at the north of Hongkong to a breathtaking aspiring industry-led world city constitutes a linear area(span on east –west) of 2020 sq km with four administrative districts:Yantian,Louhu, Futian and Nanshan housing over 4.69 million population(Ng 2003,429). Due to the government and the urban planners' inexperienced experiment of planning and development of industries in various places of SZ,the physical infrastructures of these industries are_facing a big challenge of the transformation and shifting of most of the industries from the centre of the city to the nearer suburban areas.

As a result these areas have become vacuumed space creating economic and social

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disorder making abandoned area which influences to increase social crimes. This research paper begins with an intensive literature reviews as well as physical survey to develop for an adaptive reuse of traditional old industrial building through the agro based cultivation on very popular food in china name "Indoor Mushroom culture" as a new point of potential economic, social and environmental growth.

Literature Review:

Case studies of Bio village programme of India and Opportunities of Korea and Namibia:

The Biovillage Programme, connected with mushroom growing in India, was initiated by the M.S.Swaminathan Research Foundation to improve the livelihoods of villagers in several localities in India. Here the villagers have benefited not only in terms of increased incomes, but also through healthier diets by consuming mushrooms.

"It offers new enterprises to bring new incomes, encourages the need for cooperation among enterprises and training workshops to expand the knowledge of the villagers in farming systems." The programme helps farmers in marketing their produce. Embedded in this marketing strategy is the crucial concept that livelihood is not about money, but about empowerment. The rural women in this programme have been given authority to create cooperative societies. Through such empowerment, the women have been able to achieve things that as individuals they would not have been able to. The programme has assisted villagers in establishing market linkages with local markets or market in larger cities. This is a significant part of mushroom growing for livelihood, because an enterprise cannot increase villagers' livelihoods unless they are able to transform their produce into financial returns. The formation of cooperative societies brought about significant advances in the villagers' personal worth and skills to manage small enterprises"(Marshall & Nair 2009).

The production of shitake mushrooms is a great income source of rural market in Korea. Women play a vast role in cultivating mushroom ,inoculating the logs or sawdust, and drying the harvested mushrooms. They also possess "The mushroom growers club" which provide loan services and the government provide technical support.

"Countries with hot climates lend themselves better to the production of tropical mushrooms, such as oyster mushroom, which is the second most cultivated mushroom in the world (Marshall & Nair 2009)). Oyster and shiitake mushrooms are better suited to high temperatures, and grow well in Namibia where humidity can be maintained.

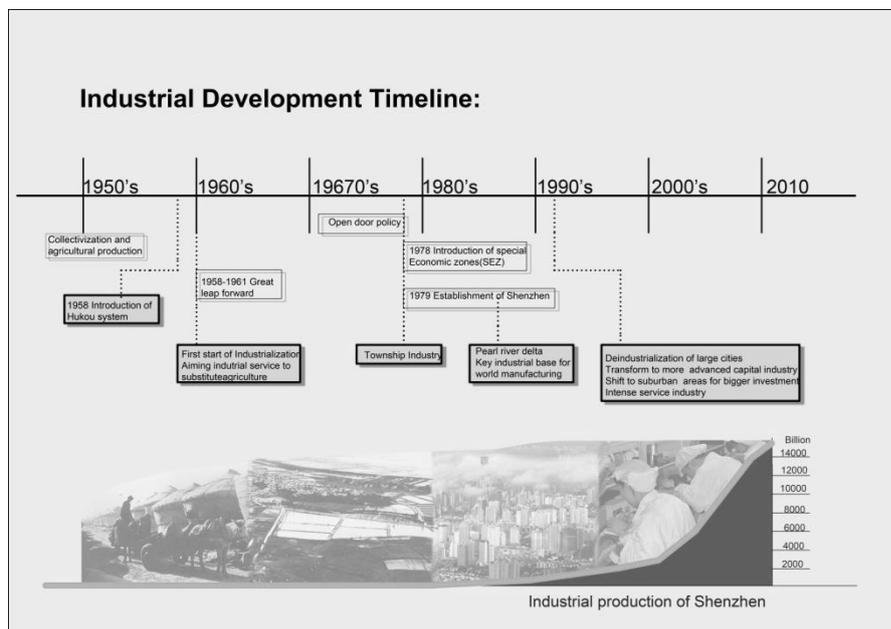
Transformation of Industries of Shenzhen "a Case study Of Bagualing":

Bagualing , a very vital place at the centre of Futian districts of Shenzhen is regarded as one of the earliest industrial area. It was planned and developed 20 years ago with an area of about 1,160,000 sqm for industrial purposes only. These industries provide printing, painting and electronics productions. Now this area is facing enormous problem due to the transformation and shifting of most of the factories to suburban areas and as a result most of the floors of the building are remaining

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vacant and some are being changed into different functions such as restaurants, retail shops e.g.

Figure: Industrial development time line



“Shenzhen’s industrial structure has undergone three different keys” (Guo and Feng 2007):

- i) From traditional industries to hi-tech industries,
- ii) From small scale and scattered operations to large scale and group based companies and
- iii) From assembling and processing to independent manufacturing.

All these factors led most of the former owners to shift their factories to suburban areas to attract more foreign investment .They also got easy access to land and infrastructure and to favorable import and export policies. Moreover due to the rapid population growth and vast commercial development around Bagualing , the industries stand alone among them. The urban built forms and the streetscapes have become inactive and losing their local character at the same time.

Methodology:

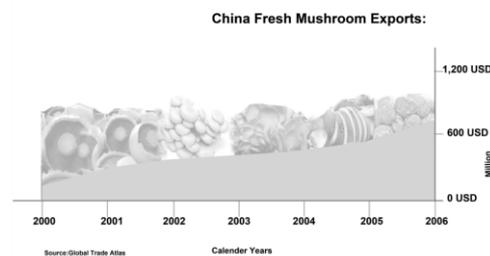
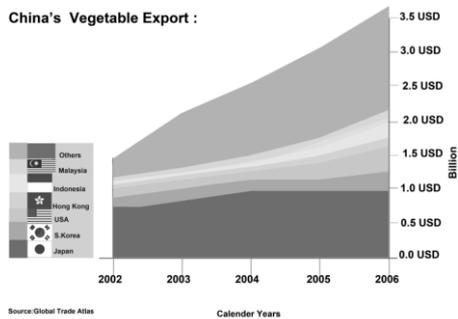
This research was conducted through field survey in the area Bagualing of Futian district, Shenzhen, China .Some data were collected from previous research. morphological survey on existing Factory buildings, surrounding residential buildings and other commercial buildings infrastructure ,vehicular and pedestrian circulation network were conducted during first stage of research. Questionnaire survey was conducted to collect social and economical information from local people. Then the design process of “The fungi culture city” was developed according to these findings The aim is to reuse and revitalize these old industry buildings and to bring back the use of these buildings into most suitable uses with minimum investment with minimum intervention which would have a great potential in terms of local economy, foreign market, local community and surrounding environment.

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Mushrooms are highly marketable delicacy in China and all over the world. World wide mushrooms are being used as food as well as medicines.

“Edible mushrooms “the fleshy fungi” are the premier recycler on planet.” (Stamets 2000, xiii).

Figures: The Increase in Demand of Mushrooms in Different Countries

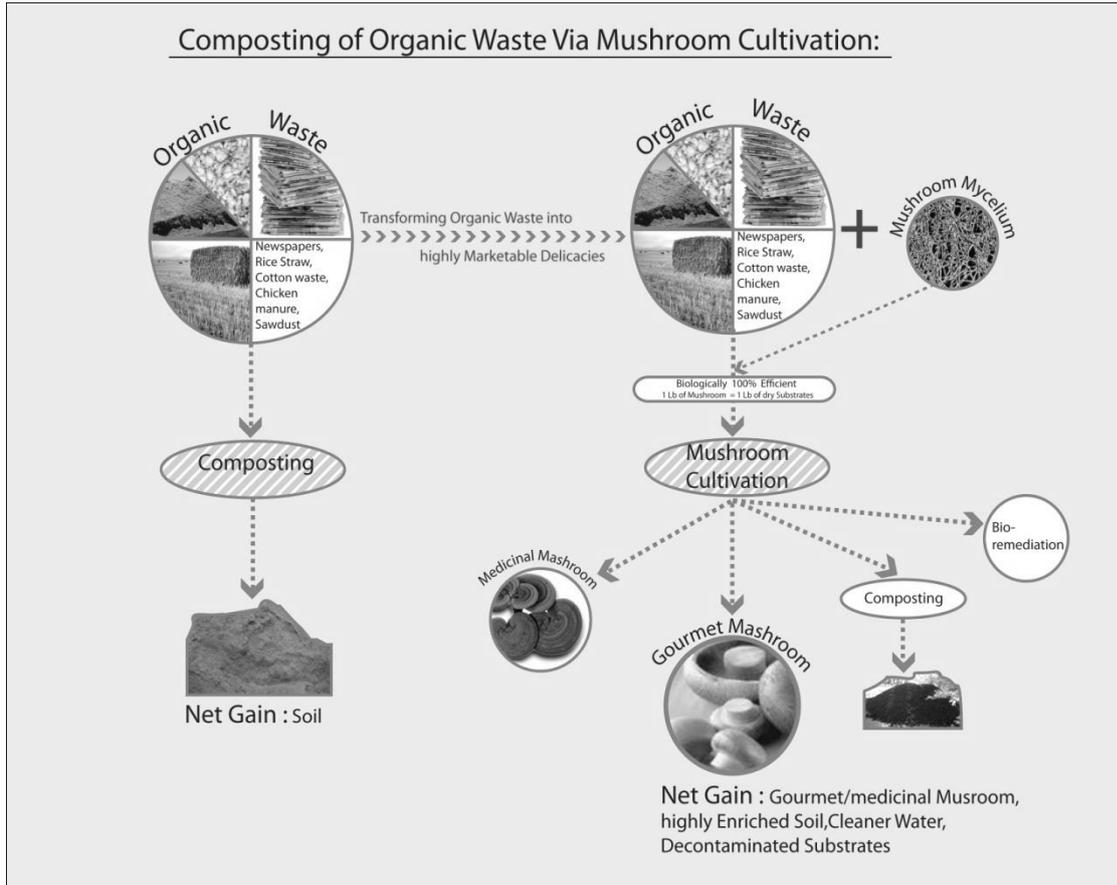


“Recycling is the minimum expenditure of effort to make the best use of local resources.”(Stratton 2000, 21)

As mushrooms grow from organic waste like rice/wheat straw, cotton waste, newspaper waste, chicken manure e.g. the production is highly low cost effective and economic.

“It is also biologically 100% efficient because from 1 pound of dry substrates, it produces 1 pound of edible mushrooms.” (Stamets 2000, 55).

Figure: Mushrooms Production Process with Organic Wastes



Analysis:

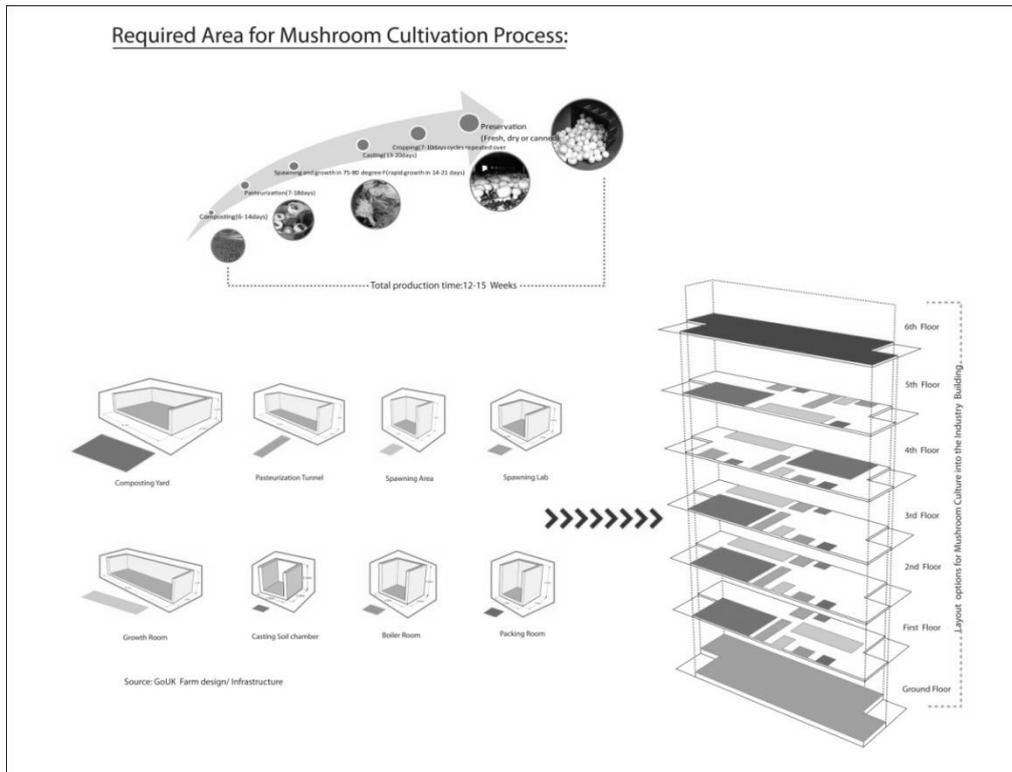
Bagualing Industry Building for Mushroom Cultivation:

For mushroom cultivation process, it is required certain spaces with the combination of a controlled environment. As mushrooms are not plants(as plants grow through photosynthesis), they grow through biochemical decomposition process at humidity level 95-100% and moisture level of 50-75% in dark places. So the requirement for mushroom production into the buildings is to ensure controlled environment.

The following figure shows the requirement areas for mushroom cultivation process (GoUK Farm Design) and also the layout options for mushroom cultivation into seven storied one industry building.Only requirement in the building is to provide controlled environment.

So this study gives a positive result for mushroom cultivation with minimum investments to build a Mushroom Culture community in that void area.

Figure: Required Area and Layout Options for Mushroom Cultivation Into One Single Industry Building of Bagualing

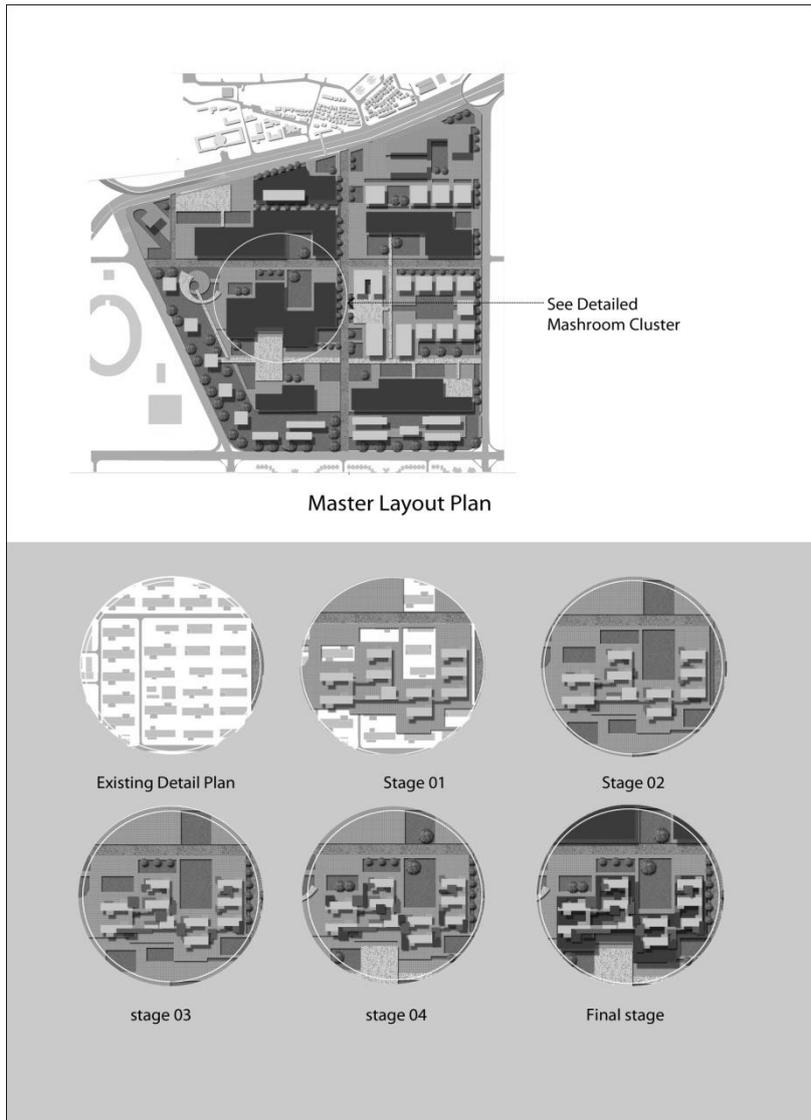


To re-organize and revitalize the whole bagualing, it have a good prospect on clustering the mushroom production buildings to make “Mushrooms Cluster Community” to improve different communal activities and surrounding environment. Results from this study has implication for building owners and the investors as it provides a theoretical as well as physical framework that can be incorporated in the decision making process for further adaptive reuse projects.

“Now Shenzhen encourage the formation of industrial clusters or concentrations to benefit from economies of scale and scope. Various industrial clusters have been formed in the city, including clusters for the garments, bicycles, furniture and semi-conductor industries. All these clusters have gained substantially from economies of scale and scope.”(Guo and Feng 2007, 12).

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Figure: Design Development Phases of “Mushrooms Clusters Community”



Conclusion:

China is the world’s largest edible mushrooms producer and around 2.7 kilograms of mushrooms is consumed per year by over a billion people.

<http://en.wikipedia.org/wiki/Mushroom>.

Also Pennsylvania is the top producing Mushroom state in united state and celebrate each September as “Mushrooms Month”.

<http://en.wikipedia.org/wiki/Fungiculture>.

“The Shenzhen Municipal Government has proposed policies to develop a recycling economy, with the aim of improving the city's environment and saving resources. On 16 March 2006, Shenzhen passed its Recycling Economy Promotion Rules, enforcing more than 10 key procedures and systems to assess a firm's mid and long-term performance and planning, and to provide government procurement and policy support for developing industries that are environmentally-friendly and energy-efficient.” (Guo and Feng 2007, 11-12).

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So by promoting and manipulating this new way of recycling growth can strike a balance between the old and the new; between social and economic development for a healthy future living.

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