Study on the transformed strategy of “life field” for aged in coal mine community

——A case study of community renewal design of Sihe coal mine in Jincheng, Shanxi

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Abstract. Coal mine community is driven by the coal mine industry, and it mainly relies on coal mining enterprises to provide benefits for residents. Under the background of increasing serious global aging problem, the problems in the field of elderly people’s health, life, entertainment, communication, retirement and re-employment and other aspects become more acute and urgently to be solved. So it is necessary to make a more detailed study on how to transform the coal mine community according to the special needs of the elderly miners. This article takes renewal design of SiHe coal mine in JinCheng of ShanXi province as an example and takes the community’s "life field" as a clue, trying to put forward the transformed strategy of "life field" for aged in coal mine community and to come up with a method to update the community throughout the whole atmosphere to the personal space.

1 Introduction

With the development and progress of society, the aging problem has become more and more significant. At the same time, the global environmental pollution problems also need to be solved. Some people have already made a lot of research focused on the coal mine community transformation problem, but most of them are studies on the building renovation[1-3] or the reuse of the mining area[4-5]. This thesis aims at how to improve the elderly miners' living condition, and solve the problem of transformation for aged under various levels of life field in the coal mine community, including introduce the concept of community life field to discuss how to transform the community entire living space, community public living space and community personal living space, and how to create a suitable living environment as well as a good coal mine "life field" for elderly miners in this area.

2 Life field in coal mine community

As the time changing and the space extending, people gather into the crowd, the network of relationships develops with the group life, and daily life becomes the "field of life", when it becomes a relatively independent social space, it is the so-called "life field". Life field is a sublimation of the field of life. The "field" comes from French sociologist Pierre Bourdieu who put forward the concept of "social space" which is defined as the network of objective relation existing among the various locations. Its nature is decided by social status and life function of each individual in the space. Different from the sense of history and culture that tallies with the "context", it is a kind of daily life; Also beyond "environment" the usual concerned, it vividly shows the relationship among people in
existing environment. the social nature concerned by the space workers appears in the naturalness of life showed by the "field", tiling the meaning of time and space, expanding the value of the crowd, and telling the wonderful story in the life field.

In the coal mining community, the life field is often reflected in such a state: the miners live on the ground and working underground when they are young. As time passes, the young miners underground turns into the old men, while the children previously playing on the ground turns into the young miners. At the same time, the environment destruction of the mining area leads to the disaster of the resource exhausted, so in the process of time cross over the space, changes appear in crowd, space, resource, environment and crisis.

(1) transformation of people: with the time passes, the children on the ground grow up into the miners underground, and the elderly move to the ground;

(2) transformation of space: people live on the ground and work underground. Two faces (above and below) of the same piece of land are entirely different. There are two kinds of life and two kinds of life field;

(3) transformation of resources: because of people's mining, the resources underground are transported to the ground and become the fuel, while the rest of resources underground are less than before;

(4) transformation of environment: the mining activities lead to bad weather and quality decline of the surrounding soil, rivers and air, so the environment gets worse;

(5) transformation of crisis: the deep excavation of underground resources turns the potential subsidence crisis and environmental crisis into reality, and residents living in coal mine community are faced with the challenges.

These transformations relate to the overall space environment, public leisure activities and personal living, which are the three different levels of the field of life from the perspective of life field, and they are the so-called life field in community, public life field community and personal life field community, so the corresponding transformation strategy should start from the three levels - macro, meso and micro according to different ranges of life field.

3 The transformation strategy for aged to SIHE coal mine in JinCheng of ShanXi province with the “life field” as a clue

Sihe Coal Mine had been prospering for nearly 25 years and it is the national key projects in plan "Nine Five". The mine is located in the southeast of Qinshui coal field and industrial site is located in Yinzhuang village. It had led to a economic development of surrounding areas. In recent years, coal production has decreased and the coal industry has been in the doldrums, and the Sihe coal mine has been affected (Figure 1).

![Figure 1](Image source: Network)

Figure 1 Current situation of Sihe Coal Mine in JinCheng of ShanXi (Image source: Network)

3.1 Integration of macro life field in the community

3.1.1 Industrial structure and life field. The overall planning should conform to the urban texture. From the macro level, integrating the planning and layout, adjusting the existing industrial structure and introducing the third industry can help provide more employment opportunities for elderly miners. We try to activate the internal traffic in order to convergence the people surrounded. Put forward the improvement strategy in view of the industrial structure and the question in life field (Figure 2).
After the transformation, the entire field shows more orderly. Following the principles of organic renewal, planning and zoning take a reasonable and humane integration on the basis of the original site. Residential areas, office areas, entertainment areas and other areas of the site have a more clearer partition. Expand the lacking infrastructure to meet the existing needs. The transformation process of the third industry focus on the office area and entertainment area, and overall layout also has certain adjustment accordingly. Entertainment, leisure and residential area adjacent to the industrial belt makes the life field in macro level has more specific centripetal force (Figure 3).

| Existing problems                                                                 | Improvement strategy                                                                                           |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1. Industrial plants occupy most of the north side of the area, and the overall area is always short of afforestation. | Macro integration of life field - the overall life field transformation of the coal mine community should use favorable factors of the original site as much as possible. Improve the adverse factors, then follow the original planning to integrate various parts of the function block. |
| 2. The railway on the west side can transport the coal but cannot transport the passengers. | 2. According to the third industry to adjust the layout - promote the new implant of the third industries, realize the the conversion of original function and maximize the land value. The funds from replacement of land can be used for enterprise restructuring and renovation. Not only provide a new life for the development of enterprises, but also ease the employment issues of retired elderly miners. |
| 3. The main road on the east side links the traffic of from north and to south, but the internal area lacks a more smooth link. |                                                                                                               |
| 4. The region is near to the surrounding villages, which has the potential of converging stream of surrounding people and promoting the surrounding economy. However, the status shows a bad connection between the area and the surrounding villages. |                                                                                                               |
| 5. There is a lack of infrastructure, such as education facilities, health care facilities, leisure and recreation facilities and so on. |                                                                                                               |

Figure 2  Problems and strategy of Macro Life Field in The Community(Image source: author self drawing)

Figure 3  Before (Left) and After (Right) the Transformation of SiHe Coal Mine (Image source: author self drawing)

3.1.2 Environmental footprint and life. Every stage in the process of human social development will
become a history for future generations. Just as the primitive society and agricultural civilization left us a lot of heritage, in the process of industrialization since eighteenth century, human beings have created a wealth of industrial culture. The industrial materials carrying the remains of industrial civilization are accumulated the industrial heritage which has historical value, technical merit, social significance, architectural or scientific value over time, and its industrial environment has also left a deep impression on people.

As the industrial construction and the environment witnessed in the process of industrial development, it can not be eliminated in the transformation, otherwise the continuity of urban development will be denied. Available buildings should be transformed into commercial service facilities, residential buildings, medical and education facilities, or creative industrial park according to its characteristics; Unavailable buildings should be integrated into the overall life field in the community according to certain principles.

Transformation of available buildings:

| Transformation into commercial service facilities | For example: Some large space of industrial buildings can provide a suitable space for the megamalls, and the services inside can be operated by the elderly independently. |
| Transformation into residential buildings | For example: the residence model of "Loft" is very popular recently. This innovative places provide for the elderly and young people with a greater degree of freedom. It has a low cost and highlights the personality. |
| Transformation into medical and education facilities | For example: Transform industrial buildings into museums, theaters, and training institutions, in order to provide work and entertainment for the elderly. |
| Transformation into Creative Industrial Park | For example: The sense of place in the old industrial buildings can inspire old artists, who can freely play and create works. |

Figure 4 Transformation of Available Buildings(Image source: author self drawing)

Transformation of the unavailable buildings:

| Existing problems | Improvement strategy |
|-------------------|----------------------|
| 1. The north is industrial zone and the south is the living area, while the middle area is a transition zone, which is short of connective reference. | 1. Turn the existing buildings into industrialized style, remain the unavailable construction, facilities and equipments as landscape elements and organize them into new community system. |
| 2. Through the analysis of buildings and constructions necessary to be remained, it can be seen that there are more remained buildings in the transition area, and there are some unavailable buildings due to the aging of the industry. | 2. Retention principle: The overall style of industrialization should be remained. Maintain the original state and the style of the building as far as possible; |

Figure 5 Transformation Strategy of Unavailable Buildings(Image source: author self drawing)
3.2 Improvement of meso life field in the community

Regional culture and life field

Regional culture is not only a kind of inheritance, but also a kind of spiritual civilization to the community. Take inheriting the regional historical context, creating a new urban life, recreation space as the design concept and urban renewa, Attempt to provide a unique development model for the functional replacement of industrial waste land and the protection of industrial heritage. It is necessary to explore new construction methods to solve the existing problems. The existing problems and transformation strategies of regional culture, as shown in Figure 8, based on the concept of people-oriented, it fully reflects the importance of regional culture and regional characteristics. So it fundamentally improves the miners’ community public life. Activity center stage design starting point is to provide a common platform for local residents, not only to meet the old people on the drama of love, but also to provide a variety of public events venue for the community. By means of architectural design, we will be the local folk art form to the elderly, so that they recall the fun of childhood, but also to provide them with the story of the stage, to create a wealth of public life for them. (Figure 9, figure 10)
### 3.3 The construction of micro life field in the community

| Existing problems                                                                 | Improvement strategy                                                                 |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1. The community lacks of local cultural characteristics and regional innovation | Highlight the culture and regional characteristics based on the concept of people-oriented. Choose a industry building to make a transformation design and transform it into a multi function activity center. |
| 2. The local cultural heritage is not only a kind of precious wealth, but also a  |                                                                                      |
| good memory and spiritual sustenance for the elderly, while such a platform should |                                                                                      |
| be provided now.                                                                   |                                                                                      |
| 3. Local elderly people in Shanxi province are interested in Jinju, Bebei Bangzi,    |                                                                                      |
| and Henan opera, but this culture has gradually submerged by the tide of modernization |                                                                                      |

**Figure 8** Problems and Strategy of MesoLifeField in The Community (Image source: author self drawing)

**Figure 9** Section of The Multi Function Activity Center (Image source: author self drawing)

**Figure 10** Entity Model of The Multi Function Activity Center (Image source: author self drawing)

**Figure 11** Problems and Strategy of Micro Life Field in The Community (Image source: author self drawing)
The construction of micro life field in the community is mainly reflected in the personal living space. A good living space can not only bring a comfortable environment for the miners, but also give miners more chances to communicate with each other. The existing problems and improvement strategies of micro life field in the community are as above. (Figure 11)

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4 Conclusion

It is a complicated work to study on the transformed strategy of "life field" for aged in coal mine community, and the problems are different in various cities and communities. Taking the case study of community renewal design of sihe coal mine in JinCheng of ShanXi province as an example, we can conclude some experiences and principles that need to be clear in the process of transformation:

First of all, "life field" can be a clue, and it should be clearly that transformed problems for aged in coal mine community based on the concept of life field are different from that in the general community;

Secondly, a comprehensive analysis of the the elderly miners’ special needs is necessary, including material and spiritual needs. At the same time, we should see the problems in a perspective of development, because as the time passes, the crowd is in change, the solutions should also be dynamic and developed;

Finally, transformation is neither completely renovated, nor completely preserved; The new methods of designing ideas should be used selectively in traditional coal mine community. Only with the remaining of original industrial flavor and humanism could we enhance the community's overall quality of life.

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