

## MANAGING SIDE EFFECTS OF CULTURAL TOURISM DEVELOPMENT: THE CASE OF ZHOUSHUANG

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**ABSTRACT:** In recent years Zhouzhuang has been quite successful in developing a mass tourism industry. However, formal analyses of the past experiences of other provinces indicate that there are significant risks in the tourism development policy followed in Zhouzhuang. Although the well preserved and reconstructed physical buildings have facilitated listing on the UNESCO World Heritage List, the traditional canal-town life style, the major attraction of Zhouzhuang, is giving way to commercialization. Quick and easy compensating measures have been adopted to create a staged image of an authentic traditional lifestyle. Precautions should be made now or Zhouzhuang runs the risk of becoming little more than a thematic park with no real cultural or social meaning for tourists or the inhabitants. A system dynamics model has been built for the purpose of developing an understanding of the complex structure of Zhouzhuang tourism development. The model consists of six sectors: physical environment, culture, infrastructure, job market, tourist, and financial resource allocation and promotion. Simulation of the model shows that the time delay, eroding target and the non-linearity are the key internal factors leading to a potential growth and decline tourism development pattern. Further simulations were conducted to examine the impacts of various policy options. The model suggests that the most effective policy for sustainable tourism development is a conservative one that controls and limits the numbers of tourists. It is expected that the model can provide a learning “micro-world” which will facilitate understanding of the complexities of tourism development and serve as a guide to effective policy formulation.

**KEY WORDS:** system dynamics; feedback analysis; tourism development; cultural tourism; world cultural heritage

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### 1 PROBLEMS DEFINITION

#### 1.1 Increasing Demand for Tourism

Tourism is a relatively new social activity that has recently emerged as a global phenomenon. The World Tourism Organization has even predicted that by the 21st century, tourist arrivals would have reached billions annually. It foresees that by the year 2010, 1 billion tourists will have traveled abroad and by 2020,

this will have increased to 1.6 billion (WEI, 1999). In terms of revenues, this would easily translate to billions of dollars yearly.

According to WEI *et al.* (1999), Chinese tourism industry has been developing very fast. Tourism income will keep on growing for the next ten years by the annual growth rate of 12%. Chinese State Council made the decision in 2001 that tourism would obtain favorable policies in its course of development. Most provinces have also formulated strategies to promote tourism and it

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can be observed that tourism is developing all over the China. However, negative impacts embodied in the tourism development and their effects on the destination attractions also are gradually perceived. Policies and actions should be taken to minimize the negative impacts and support the sustainable tourism.

A case study of Zhouzhuang tourism is presented here. It is expected by experimenting with a system dynamic modeling of Zhouzhuang tourism development that the dynamics patterns of Zhouzhuang tourism development can be understood, and policies based on the change of these patterns can be obtained.

## 1.2 Tourism Development in Zhouzhuang

### 1.2.1 The historical development of Zhouzhuang

Zhouzhuang, an ancient town with an area of 24.3ha built beside a beautiful river 900 years ago near Shanghai and Suzhou, is noted for its old bridges, traditional gardens and life styles of local people and their culture uniqueness(RUAN, 2000). Efforts have been made to protect and reconstruct the landscape and buildings of the old town since the 1970s by the local governments and local communities. Great achievements have been obtained and the old town becomes a major tourism attraction and is applying for world cultural heritage.

Development of Zhouzhuang tourism benefits from its relative backwardness in this region. The region in which Zhouzhuang is located in is well developed and famous for its rural enterprises. Zhouzhuang was left out to some extent due to its low service level of infrastructure. The old town and its traditional life style were reserved because the locals could not afford to rebuild their new houses and thus obtained the opportunity to develop tourism in the late 1980s when tourism began to develop in China. A rural-township company headed by the director of the Zhouzhuang Town was set up to manage tourism development. The company has been quite successful in attracting tourists (Table 1).

The development of tourism has brought tremendous economic benefits to the local communities. In 1998, direct ticket income reached 1.5 million yuan (RMB) and the total tourism income 230 million yuan.

Table 1 Historical data of Zhouzhuang tourists ( × 10<sup>4</sup> persons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Tourists	11	12.8	15	20	25	40	50		80	125	130

Sources: Sozhou Tourism Master Plan Project by Zhouzhuang Tourism Development Co. Ltd., 2000.

Meanwhile, tourism also generates other business opportunities(RUAN, 2000). Zhouzhuang already turns into an economically powerful town.

### 1.2.2 Tourism attractions in Zhouzhuang

In the proposals submitted to UNESCO for world heritage, four major values are listed: 1) The town, not impacted much by wars and other disasters, is located in a region which has always been the most developed in China since the 9th century. It presents well the local history. 2) The layouts of the town and buildings were beautifully designed and express the harmony of nature and human. 3) The water town plays an important role in the regional economic system. 4) Humanity is the essence of the local culture. Local people are famous for their simple happiness and honesty.

### 1.2.3 Major decision makings in Zhouzhuang tourism development

Tourism development started in the 1980s. Strategies and policies have been made and implemented in order to raise the destination attractiveness and increase economic returns on tourism investment.

Promotion is a major strategy. An increasing substantial potential of tourism income has been devoted to promotional efforts. To be registered in the world cultural heritage directory is also a way of promotion of tourism.

Strategies are formulated to reallocate some residents in the old town to reduce environmental pressures and make it easier for the company to manage the attraction. Although tourists are several times more than resident during the national holiday days, impacts of tourists on the local environment and society are not managed and controlled properly. In order to bring a staged authentic local cultural atmosphere for tourists, blacksmith and grass weaving shops have been established. For the same purpose, a brand called Wangshan was also contrived for a serial of specialties, such as

Wangshan Pig Foot, Wangshan Cake and Wangshan Wine. However, since raw materials for specialties are not produced locally, the economic leakage is quite large.

The Protection Plan of Zhouzhuang Old Town was finalized and is being implemented. Formerly demolished traditional style buildings, such as bridges, old gardens have been reconstructed. However, environmental facilities have not been put into place to treat waste water and waste solids.

#### 1. 2. 4 The corporate structure of tourism development

The corporate is now headed by the deputy governor of Zhouzhuang Town. The ownership determines that the corporate has strong linkages with the local communities and has strong control over local residents. Compared with other tourism development regions controlled by external monopolized tourism companies in many developing countries, the strategies that Zhouzhuang Tourism Company has adopted are less opposed by the locals. For example, the resettlement program has been quite well accepted by the locals. However, resistance from the locals can rise if the potential conflicts are not solved in the early stage of tourism development.

### 1. 3 Impacts of Tourism on Local Attractions

#### 1. 3. 1 Job opportunities

Tourism is touted as a major source of employment worldwide. Tourism development has provided substantial job opportunities in Zhouzhuang. However, local people prefer categorizing themselves producers to service providers. Migrants are attracted to start small business and work in tourism sector. All the low pay jobs are filled by outsiders rather than the locals.

#### 1. 3. 2 Commodification

When TSARTAS(1992) studied the sociological impacts of tourism on two Greek Isle, he pointed out that the declining of the cultural value is hard to be perceived. Tourism development has also caused a lot of cultural changes in Zhouzhuang.

According to the survey done in November of 2000, commodification is undertaking rapidly in Zhouzhuang. There are 466 various shops situated in the

old town (including the ones in the process of decoration). There are 166 craft shops selling framed photos, 94 restaurants and local specialty shops mainly selling Wangshan pig foot. These shops are basically for tourists. The old town has turned into a busy business town especially for tourists. Articles on the commodification in Zhouzhuang have reported in newspapers (CHEN, 2001).

#### 1. 3. 3 Environmental damage

The total area available for tourists is about 10 000m<sup>2</sup>. If 15m<sup>2</sup> are needed for each tourist, the maximum carrying capacity is about 2000 people per day. During the public holiday period, average tourists visiting this place far exceed its carrying capacity. The over-crowdedness brought environmental damage, especially water pollution. With the increase of tourists and the opening of 24 big-scale restaurants discharging wastewater directly into the canals, water is badly polluted.

Although any new construction inside the old town was controlled quite strictly, hotels and other service facilities have been built around the old town attempting to benefit from the arriving tourists. New tourism products, "free-riders" of the old town, such as a Japanese style golf course, and other recreational facilities are also constructed rounding the old town. The image of quite and peaceful water-town is hardly obtained.

Also, travelers' expectations of the goods and services, can lead to the items or services, being imported from outside or local supply chains, being distorted to meet demands and sometimes lead to the increased consumption of local natural resources (HUNTER and GREEN, 1995; STABLER, 1998). The increased demand for water and pig feet in Zhouzhuang is a good example.

#### 1. 3. 4 Latent conflicts between local people and tourism development

The work done by BULTER(1980) and others indicates that the level of tourism development influences residents' perception of the tourism development and thus leads to potential conflicts. WILLIAMS and SHAW (1998) pointed out that there is no simple linear relationship between the growth of tourism and the benefits

for local communities. In the initial stages, tourism may bring benefits to the locals. With the further development, both consequences may become more apparent. Therefore, DOXEY(1976) and GUNN (1988) even predicted that there is an inverse relationship between tourism development and local support.

The conflicts between local people and tourism development in Zhouzhuang now are not obvious, but potential conflicts have been perceived. 1) Some attractions are reserved for tourists rather than for locals. 2) Living environments for residents have not been improved much to preserve traditional buildings. 3) Although jobs are created in tourism service sector, the economic leakage is high. Young people are attracted to work and live outside the old town<sup>①</sup>. According to the survey done in 1997, more than 37% of households are seniors over 60 years old. Population of the community is aging and becoming a migrant community. 4) Houses become very expensive for living. It is profitable for residents to rent houses for commercial use. Therefore, although Zhouzhuang tourism development is a community based one, conflicts between tourism development and local culture can still develop gradually and become intense if not controlled properly.

#### 1.4 Institutional Capacity to Address the Impacts of Tourism

Since the type, scale and significance of environmental and social impacts on tourism destination vary individually, depending upon the ability of a visited area. Impacts may be short or long term, direct or indirect, local, national or global, positive or negative (HUNTER and GREEN, 1995). Therefore, there are no standard procedures to perceive, evaluate and manage these negative impacts. The capacities of local institutions are the keys for the success to control the social risks of tourism activities. If the negative impacts are not properly addressed, the negative feedback in return can lead to the destruction of tourism. However, the insitutional capacity to address these risks and negative

impacts is not strong.

#### 1.5 Perceived Feedback Impacts on Tourism

Although tourists are still growing in Zhouzhuang, negative feedback of tourism impacts has already been perceived. The tourist survey done in May of 2000 shows that tourists complained about environment quality<sup>②</sup>. The polluted water is contrast to the expected image of water town and crowds in Zhouzhuang which should present a peaceful and comfortable place to live and enjoy. Complaints are also about commodification controlling the old town instead of a peaceful and friendly water town. Tourists are forced into shops and restaurants. Informal vendors take the space of Beishi Street, the major but small tourism street. The sight of landscape is thus impacted.

Returns of investment on reservation and promotion are declining because of the limited time tourists stay in Zhouzhuang for sightseeing and also because of large economic leakage. In order to attract tourists and bring returns to investment, an increasing percentage of tourism income is allocated for promotion. Waste treatment facilities are always under investment.

However, compared with other industries, tourism industry has fewer impacts on environment and local cultural than other industrial sectors in this region. Tourism industry has a vested interest in protecting the natural and cultural resources that are the core of its business. Therefore, the emergency challenging is to search for operational policies challenging to mitigate these negative impacts.

The above analysis clearly shows that there are four characteristics affecting performance of Zhouzhuang cultural tourism. 1) The overall pattern of cultural tourism development is determined by feedback structures. 2) The decline of cultural value, especially the intangible cultural attractions is a slow process. The decay is gradual at the beginning of the degradation but rapid at the later stage. 3) There are long delays between the perceived impact of tourism and the imple-

① Protection Plan of Zhouzhuang Ancient Town. Tongji University, 1997.

② Provided by Zhouzhuang Tourism Development Co. Limited.

mentation of tourism development strategies. 4) Institutional capacity to address the negative feedback is low. Therefore policies may not necessarily address real causes for the occurrences of the potential problem. Instead, additional problems are raised by these simple and quick solutions. For example, when the lack of authentic life culture in Zhouzhuang is pointed out, the Company enriches the traditional culture by setting up blacksmith shops etc. in order to create a "staged authentic life".

## 2 A SYSTEM DYNAMIC MODEL OF ZHOUSHUANG TOURISM DEVELOPMENT

A proper methodology is needed to analyze time delays, non-linearity and feedback in order to explore effective policies to radically improve the development pattern of cultural tourism in the long term. System dynamics has been used in the domain of complex modeling methodologies involving computer simulations and feedback analysis for over three decades (FORRESTER, 1961; 1968). Feedback analysis, a core in system dynamics, has been used in study and research of social and management problems since the beginning of this century and helps understand the characteristics of the management problems (RICHARDSON, 1991). It is excellent for to quickly capture the hypothesis of the causes of dynamics, and communicating the important feedback the researchers believe are responsible for the problem (STERMAN, 2000). The stocks and flows, the analytical tools for system dynamics, can capture stock change, time delay process and non-linearity.

### 2.1 The Overall Structure of the Model

Fig. 1 is the overall structure of the model<sup>①</sup>. The overall map shows the complexity of the internal structure determining tourism development in Zhouzhuang. That model is composed by following sectors: physical environment, culture, infrastructure,

job market, tourist, financial resource allocation and promotion.

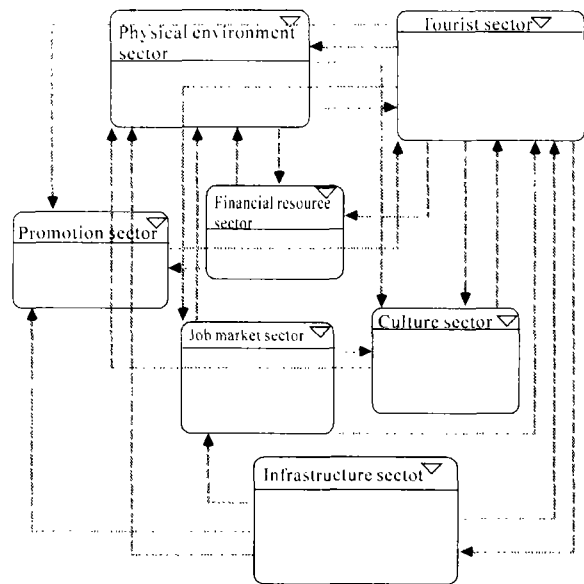


Fig. 1 Overall structure of the model

Physical environment sector illustrates attributes of physical environment that the town is situated in, including bridge attractions, gardens, canals and water. Culture sector illustrates the change of cultural value. Job market structures the employment opportunities in tourism industry. Infrastructure sector is a simplified version of provision of infrastructure service. These four sectors together determine the attractiveness of tourism destination.

Tourist sector describes the travel decision. Financial resource sector shows the decision of the company to allocate financial resources between protection and promotion. The promotion sector gives a simplified version of efforts for promoting tourism in Zhouzhuang.

The overall map demonstrates that attractiveness of the destination brings tourists who in turn normally have negative impacts on destination attractiveness. The extent of tourist activities determines resources needed for conservation of physical environment and the utilization

<sup>①</sup> The early version of the model is provided by Prof. Khalid Saeed, Worcester Polytech Institute, USA. The software for the simulation is *ithink* which is the product of High-Performance Co., USA.

rate of existing infrastructure has effects on resources allocated to promotion. The resources allocation in turn affects tourist sector and physical attractiveness.

## 2. 2 Sector Description

### 2. 2. 1 Tourist sector

REIZINGER(1994) defined that the culture tourism is a form of experimental tourism based on the search for and participation in new and deep cultural experiences of an aesthetic, intellectual, emotional, or psychological nature. STEBBINS (1996) pointed out that cultural tourism is often contrasted with causal leisure: immediately, relatively short-lived pleasurable activity requiring little or no special training to enjoy it.

In this model, tourists who are attracted to Zhouzhuang, are basically cultural tourists. However, these tourists are aggregated into two types of tourists determined by their relative preferences for culture attractiveness and infrastructure availability. They are cultural preference tourists and mass tourists. There are no clear distinctions between the two types of tourists. All tourists are attracted to the destination by three factors, local cultural identity, by the adequacy of infrastructure including easy access and good accommodation and by the quality of physical environment. The difference among them is the weight of the three attracting factors on the overall attractiveness of the destination.

### 2. 2. 2 Physical environment sector

Physical environment, an aggregated concept of natural and built environment, is a stock(SAEED, 1994). The stock is decreased by the consumption outflow and increased by reconstruction inflow. The consumption rate is determined by the indicated consumption but effected by the management effort. Indicated consumption is the sum of indicated consumption that tourists, existing infrastructure, migrants, and construction of infrastructure tend to impact or consume. Reconstruction rate is determined by resources devoted for the reconstruction.

### 2. 2. 3 Culture sector

The model assumes that local people tend to keep local cultural value. The cultural value is represented by the ratio of local people out of total population which is the sum of tourists, migrants and local people. More local people remain, the greater local culture is kept. Local people move out of the old town due to low variety of job alternatives, opportunity cost for keeping room for their own use rather than commodification, the slow process to improve living environment inside the old town and the high population density. The decline of cultural value has non-linear relationship with the local culture value. When the percentage of tourists of local people is low, declining rate of value is slower than that when the percentage of tourists of local people is high.

If the assumption culture is the foundation of a society is acceptable, it is clear that tourism-if conducted in an unsustainable manner-can contribute to social impoverishment. However, as WOOD(1980) points out cultures are not passive, and must become sensitive to the cultural strategies people develop to limit, channel and incorporate the effects of tourism. The reconstruction of culture is a long time process.

### 2. 2. 4 Infrastructure sector

Infrastructure sector is a simple version of investment decision for hotels, transportation facilities, etc. The infrastructure capacity is a stock. It is increased by the construction rate and decreased by the decay rate. The construction is a delay function of investment decision, a key decision in this sector. The investment depends on the availability of infrastructure represented by infrastructure per tourist. Investment in tourism infrastructure facility is very attractive in this region. Therefore, the normal market situation is over supply.

### 2. 2. 5 Job market sector

Although Zhouzhuang tourism sector has generated job potentials, a substantial percentage of employment opportunities, either as small shop owners or as manual workers, are often taken by the outsiders attracted by the job availability. In the model, job availability is defined as migrants divided by the total available jobs, which is the sum of available jobs in infrastructure

construction and tourism service sector. When there is no job, migrants will move out.

### 2.2.6 Financial resource sector

Financial resource sector describes financial resource distribution between the conservation and other expenditures including promotion. When the importance of conservation of the destination has been perceived, part of the tourism revenue effected by the number of total tourists is allocated for preservation of physical resources. The fraction of other expenditures effected by the utilization rate of infrastructure facilities is allocated for tourism promotion.

### 2.2.7 Promotion sector

The fraction allocated for promotion is growing very fast due to furious competition from neighboring old towns. Promotion expenditure per tourist is used as an indicator of promotion intensity. But the effect of promotion is not a linear function of the promotion intensity.

## 2.3 Learning from Model Simulation

Fig. 2 is a simulation result of cultural tourism development in Zhouzhuang. The figure shows that while total tourists rise, the cultural attractiveness begins to decline. The decline is gradual at the beginning but then at a faster rate at the later stage. When cultural attractiveness declines, cultural tourists first lose interest, while the mass tourists are gradually attracted to this place. Therefore, the total tourist number rises. The growth of mass tourists can not last long. When the physical environment and local culture are heavily impacted by the increased tourists, mass tourists suddenly drop.

## 2.4 Feedback Structures Determining the Behaviors

Fig. 3 and Fig. 4 explain structures determining the development pattern in Zhouzhuang. Fig. 3 is the growth mechanism and Fig. 4 is the limiting mechanism for Zhouzhuang tourism development. There are three major growth (positive) feedback loops in Fig. 3. The first positive loop, the building of tourism infrastructure, is the usual mechanism that tourism developer

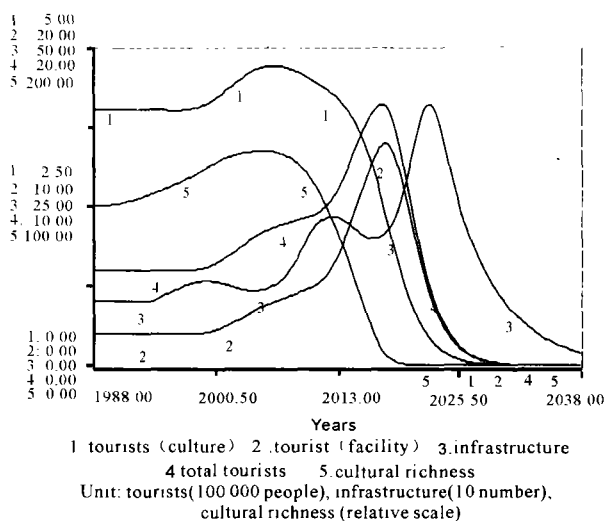


Fig. 2 Base run of a typical cultural tourism development

would like to implement. The incentive for investment in infrastructure construction is strong although the effect of infrastructure improvement begins to reduce along with the increase of the infrastructure facilities. Feedback loop 2 is the growth feedback between the promotion and tourism development. Feedback loop 3 is the feedback between tourism revenue and resources allocated for the environmental protection.

There are five negative feedback loops in Fig. 4. The five feedback loops all take effect either through the reduction of environmental attractiveness or through the reduction of cultural attractiveness. The growth of tourists and construction of infrastructure have negative impacts on the environment. The environmental quality and attractiveness of physical environment are reduced. Other three feedback loops are related with the reduction of cultural attractiveness. When tourists arrive, they bring different culture and impact on the uniqueness of the local life style, etc. When more tourists arrive, more jobs will be available for the outsiders. In the mean time, when tourism grows rapidly, the pressure on environment grows and locals feel uncomfortable to live in the old town. Local residents tend to move out. In the end, traditional cultural value and traditional community identity erode.

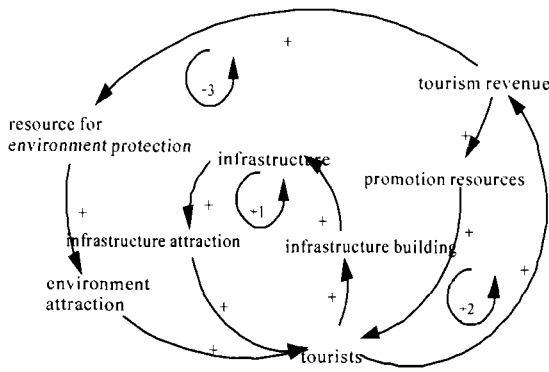


Fig. 3 Growth mechanism for tourism development in Zhouzhuang

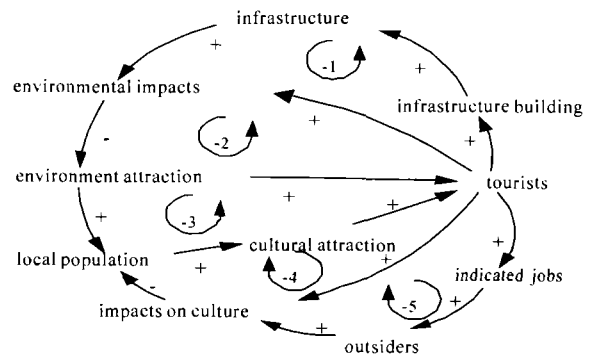


Fig. 4 Constraining feedback structure for Zhouzhuang tourism

### 3 POLICY EXPERIMENTS

#### 3.1 Improving Operators' Professional Performance

It is argued that a lack of commitment by tourism operators and travelers contributes to the poor maintenance of local environment and culture of the host destination. Improved service of guides may reduce impacts by regulating visitor behavior and improve their experience (WEILER, 1993). In order to understand the effects of responsible and competent tourism guides, a simulation was run at the time of 2000 with the assumption that environmental awareness is raised and the damage on the physical environment is reduced. The simulation run shows that the growth of total tourists lasts longer and the collapse of tourism is postponed. However, the overall pattern is not effected because impact of tourism on the local culture is hardly controlled.

#### 3.2 Participatory Approach Involving the Locals

Many researchers (BRAMWELL and SHARMAN, 2000; WALL, 1999) have also pointed out that unless indigenous peoples directly participate in the planning, implementation, and regulation of tourism activities that affect them, and unless benefit-sharing mechanisms are put in place, tourism can never redound to their interest. Conflicts between community and tourism development can be intensified and lead to the collapse of

cultural tourism (ROBINSON, 1999).

Tourism development in Zhouzhuang is community based. The established company has strong connections with the locals. Conflicts between the community and the attraction developer have not been perceived tense. At this stage, both the cooperate decision makers and the local communities have obtained the economic benefits and perceived potential benefits from tourism development in Zhouzhuang in recent years. More tourists become a shared vision for the two parties. Tourism development gradually turns from the protection of the cultural uniqueness to money generator. Two major characteristics of tourism attractions gradually erode. Local residents are likely to move out to new urbanized area when they become rich. The town turns from a traditional regional economic center to a pure tourism town. Therefore, participatory planning at this stage is not a radical solution.

#### 3.3 Protection of Physical Environment

Fig. 5 is the simulation runs of implementation of improving the physical environment policies. At presently, Zhouzhuang is applying to get listed by UNESCO as world cultural heritage site. Therefore, substantial resources are allocated for the protection and reconstruction of the built environment to meet the criteria. The authentic way of living culture in the old town is continuing to change rapidly. Since the change of behavior is difficult to be perceived and be guided, the



overall trend of unsustainability is hard to be prevented. The total number of tourists gradually rises and then collapses. When the tourists decline, infrastructure also declines and added to the further declination of mass tourists.

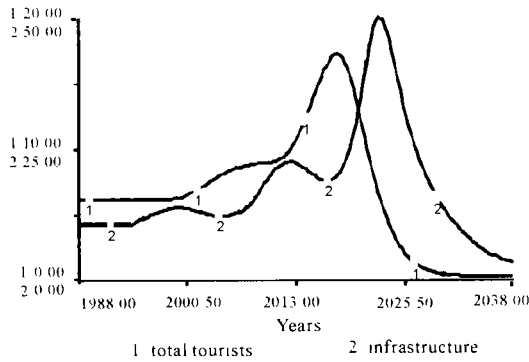


Fig. 5 Simulation runs of improving the physical environment

### 3. 4 The Implementation of Carrying Capacity Policy

The most important cultural tourism management is the implementation of carrying capacity concept widely accepted. There has been no acceptable standard methodology to define destination's capacity. Even when they have been defined, strategies are hard to implement within the limits of carrying capacity. This may be due to broader management and local area objectives(BUTLER, 1997).

Simulation runs have been made to test the effectiveness of the policies when different levels of maximum carrying capacity are implemented to control tourists. Fig. 6 is the results of this simulation run, indicating that the policy can impact the total tourist number visited Zhouzhuang. But, it can not prevent the decline of tourism. The implementation of carrying capacity does not mean that local culture can be preserved. When local residents benefit from tourism development, demand for better living environment increases. More local people tend to move out of the old town if the living environment has not been improved for them.

The simulation runs implies that imposing carrying capacity can be effective when it is implemented with

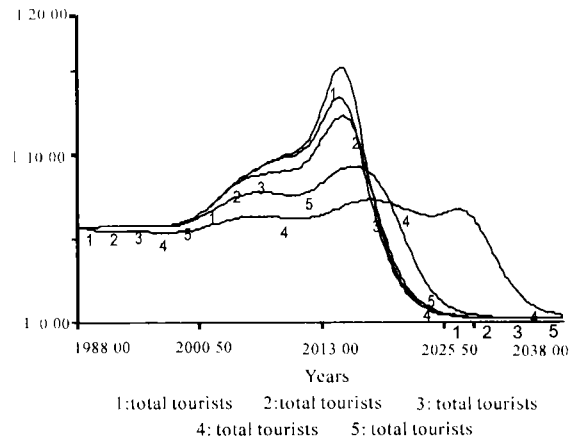


Fig. 6 Simulation runs of implementing carrying capacity policies

other policies to help the locals to construct and preserve their living cultures. Although it is operational difficult to optimum carrying capacity, it is more sustainable to formulate and implement a conservative standard than an optimistic way in order to obtain lone term benefits. The shared vision for tourism development has to turn from mass tourism to quality tourism. "alternative tourism" strategy should be adopted.

### 4 CONCLUSIONS

Cultural tourism has the potential to help preserve and enrich local indigenous cultures not only in the short term, but also from a trans-generation long-term perspective. Indeed, the development of a sustainable tourism model could play a valuable role in the development of more sustainable societies worldwide. There are, however, significant risks involved. The challenge is how to preserve the living cultural value with the growth of tourism industry. By conducting controlled experiments through system dynamics modeling, it has been learned that cultural resources are vulnerable and can easily lose their core content. Therefore, whenever cultural tourism strategies are formulated, the vulnerability of the cultural resource being promoted must be carefully assessed to ensure that any planned activities do not threaten or undermine it.

Furthermore, it is absolutely critical that the true

value of cultural tourism is to be understood and appreciated by the local communities at the beginning of tourism development. Alternative approaches to develop and sustain cultural tourism must be found to control the risks caused by tourism development.

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