

# THE WAY HOW TO COMBINE CREATIVITY ON USE WITH THE IMPROVEMENT OF BUILT ENVIRONMENT

Shuichi MATSUMURA

Department of Architecture, Graduate School of Engineering, The University of Tokyo, Japan

Correspond to [smatsu@buildcon.t.u-tokyo.ac.jp](mailto:smatsu@buildcon.t.u-tokyo.ac.jp)

**ABSTRACT:** “We need to overcome the lack of space and infrastructure.” Construction in the 20th century had been basically motivated by this need. It had enabled almost automatic financing on land as well as plenty of public investment. However we cannot expect such investment in built environment any more in the 21st century, when urban structures have been fully built. “We have space and infrastructures but want to make them better.” We must find the new way how to strategically organize creativity on use as well as such users’ want itself for sustaining investment in built environment. In this paper the outline of such a new way is discussed.

*Keywords: Existing Building Stocks; Conversion,; Life Span of Buildings; Transformation of The Industry*

## 1. INTRODUCTION

### 1.1 Objective

It is the way how to continuously and effectively manage modern cities which had been built during the last century all over the world without destroying all that should be thought out today. Concretely two things should be pursued. Firstly, the effective use of existing space in cities should be pursued following the change of human activities. Secondly, the improvement of circumstances for investment to introduce and organize users’ want and their own creativity on use should be pursued.

In this paper the outline of the way how to combine creativity on use with the improvement of built environment is made clear taking an example of conversion of existing buildings.

### 1.2 Related Researches Already Done in Japan

All architects and building engineers are much interested in the way how buildings designed and engineered by themselves are actually used. So there have been many researches to analyze and clarify the actual use of buildings for a long time. However such creativity on use that can introduce completely different use from designed function of

space had not been researched.

Conversion is a typical phenomenon lead by such creativity. Researches on it has increased in Japan since the beginning of this century. Fig.1-1 shows the number of the papers which dealt with conversion and were presented in the field of architectural planning and design, urban planning and design, rural planning and design as well as building economics at the annual meeting of Architectural Institute of Japan since 2001. It has clearly increased so far - 15 papers in 2001 (1.1% of 1344 papers in total), 20 in 2002 (1.3% of 1533), 29 in 2003 (1.8% of 1614), 49 in 2004 (3.0% of 1654) and 50 in 2005 (2.9% of 1708) -.

As most of actual conversion projects have occurred when buildings became not-in-use, most papers in 2001 dealt with how to use such buildings as old vacant folk houses, vacant historical buildings, vacant shops in the central district of local cities and schools suffering the rapid decrease of pupils. As vacancy rates of offices had risen later, object building types of researches clearly varied. At the same time researches focusing on the new use after conversion such as urban housing, housing for elderly people, day-care center, community facilities, etc. as well as researches clarifying the purpose of conversion such as tourism promotion, revitalization of city center district, etc. appeared.

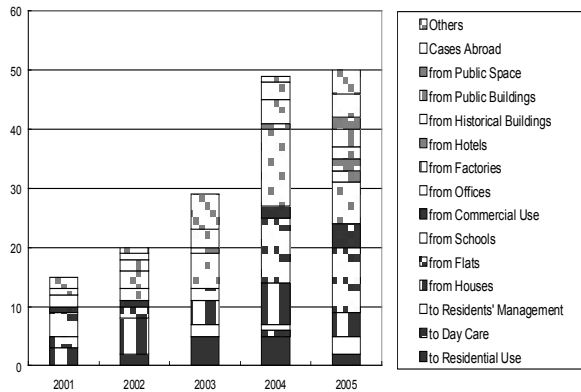


Fig.1-1 The Number of the Papers Dealing with Conversion Presented at the Annual Meeting of Architectural Institute of Japan (2001-2005)

### 1.3 Composition of This Paper

The way how to combine users' creativity on use with the improvement of built environment is discussed taking an example of conversion, researches on which are increasing as mentioned above, following the composition shown below.

Firstly the reason why users' creativity on use has become important in the improvement of built environment is clarified (Chapter 2). Concretely the enlargement of the role of existing building stocks compared with new building activities is statistically revealed in developed countries' cases including Japan based on such recognition that users' creativity on use has become important because the role of existing building stocks has become more and more important.

Secondly, how conversion occurred, evolved and lastly was guided by public sectors is made clear in cases of New York, Paris, London and Sydney (Chapter 3). The emphasis is made on the role of public sectors.

Lastly, integrated approach is discussed, which is essential when they would like to promote the combination of users' creativity on use with the improvement of built environment (Chapter 4).

## 2. THE REASON OF THE IMPORTANCE OF USERS' CREATIVITY ON USE

### 2.1 Long Life Span of Existing Building Stocks

As the life span of building stocks become longer, the importance of the combination of users' creativity on use with the improvement of built environment naturally becomes

more. As for the life span of buildings, there is no statistical data for international comparison. So, in this paper, in order to do an international comparison even roughly, the number of existing housing units is divided by the annual number of newly-built housing units. This value after calculation can show how many years it will take to find all building stocks in a country completely renewed in case that there is no increase nor decrease of housing stocks and also all new housing units are stably built after demolition of existing housing units.

Fig.2-1 shows the transformation of the value in nine developed countries including Japan during 1983-2003. Two clear tendencies can be pointed out here. Firstly, in every country the value in 2003 exceeds that in 1983 much. Secondly, the value of Japan is always much below that of eight other countries.

The former tendency is the inevitable result of the increase of the number of housing stocks and the decrease of the number of newly-built housing units. And it means the reduction of new building's role and the enlargement of building stocks' role. The latter one shows that such reduction and enlargement have not been so big in Japan as other developed countries yet on one hand, but on the other hand even in Japan it is clear that the role of building stocks are being enlarged.

### 2.2 Transformation of Investment in Building

Such reduction of new-building's role and enlargement of building stocks' role can be supported by transformation of investment in building. Fig.2-3 shows the transformation of the percentage of maintenance and renovation in the total investment in building activities in 12 European countries' and Japan's cases during 1983 - 2005 (except for Austria 1984 - 2005, Spain 1988 - 2005 and Japan 1990 - 2003). Three clear tendencies can be pointed out as show below.

1. The percentage of maintenance and renovation of existing buildings in the total investment in building activities has increased in these 23 years in every country.
2. In Europe while the percentage in 1983 ranged from 16% to 51%, that in 2005 did from 35% to 67%. It can be said much increase. Although the percentage in Japan also increased from 12% in 1990 to 23% in 2003, it is much lower than European countries. Therefore Europe

must have more experiences than Japan and many things seem able to be learnt in terms of the combination of users' creativity on use with the improvement of built environment.

**3. CONVERSION AS A TYPICAL PHENOMENON CAUSED BY USERS' CREATIVITY ON USE**

**3.1 How Did Conversion Occurred and Evolved at SOHO in NY City? (Ref.4 & 5)**

Although SOHO district is nowadays one of the most fashionable districts in Manhattan, it was originally a light industry district where more than 55% of total floor area for the industry in New York City was located in 1970s. Light industries were mostly located in many "Loft" buildings there.

Those "Loft" buildings started to be converted to studios in earnest by artists firstly since 1960s. Although such conversion from industrial use to art studio use was illegal, about 2000 artists and their families lived at SOHO district

in 1970. It can be said that legal system didn't fit users' creativity on use. After some artist association had appealed their right to live there in 1960s, zoning of the district was changed to partially allow commercial and residential use in 1971 and conversion to residential use became to be subsidized as housing in 1975. According to NY city government's report, the loft buildings more than three stories of which were converted to residential use exceeded 1000 in 1977. Lastly "Loft Law" was established to set legal requirements for converted residences in 1981. Consequently building owners came to earn more rent than before and the valuation of their properties became higher. On the other hand not only original tenants, light industry, but also new tenants, artists, were forced to go out in around 1975 because big real estate companies came into the market to make the average rent higher. NY city government's report in 1983 showed that the percentage of those who lived in converted apartments from vacant space was merely 4%. It meant most of conversion was not effective use of vacant buildings any more and became rather profitable housing with forcing former tenants to go out. And this district has become so

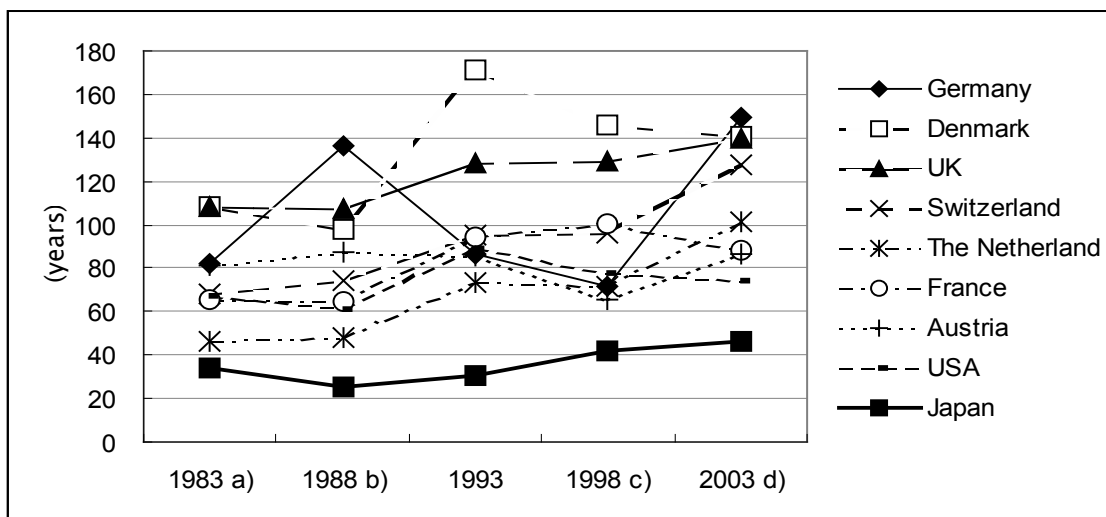


Fig.2-1 The Number of Existing Housing Units Divided by the Number of Newly-Built Housing Units in the Year (Based on Housing and Land Survey by Ministry of Internal Affairs and Communications Japan, "New Dwellings Started" by Ministry of Land, Infrastructure and Transport Japan and Annual Bulletin of Housing and Building Statistics for Europe and North America)

- a) Only West Germany
- b) The data of USA, UK and Germany are in 1987. Only owner-occupied houses in USA. Only West Germany.
- c) The data of USA, UK, Austria, Switzerland, Germany and France are in 1997.
- d) The data of USA and Austria are in 2001. Those of UK, Netherlands, Switzerland, Denmark, Germany and France are in 2002.

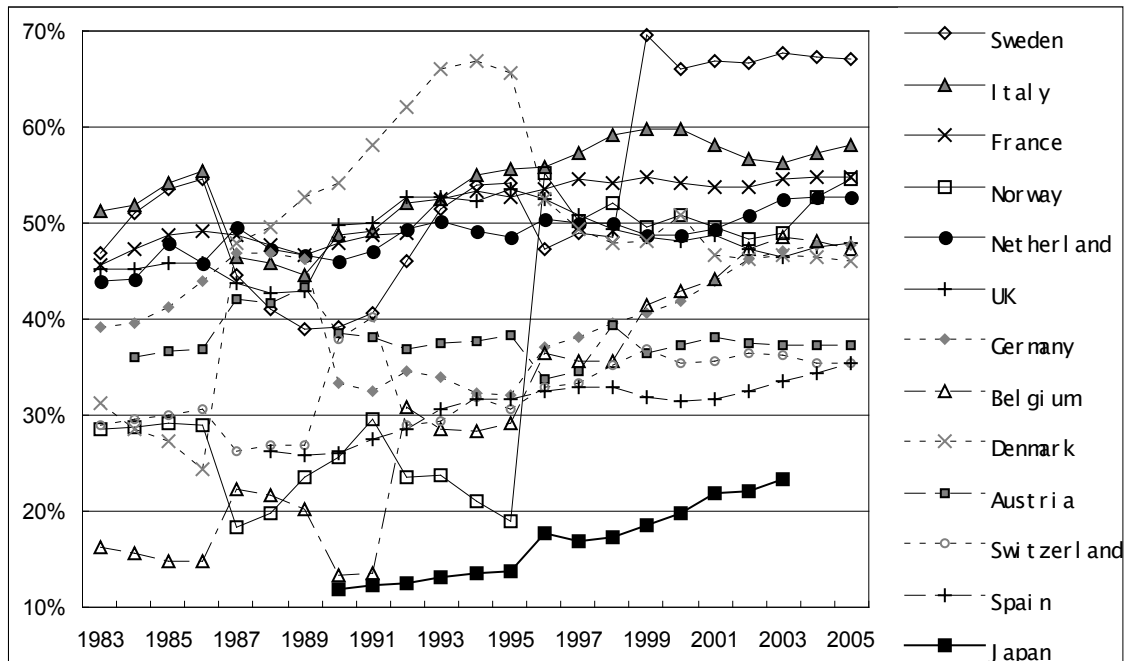


Fig.2-2 The Transformation of the Percentage of Maintenance and Renovation in the Total Investment in Building Activities in 12 European Countries' and Japan's Cases during 1983 – 2005 (based on EURO Construct's data and Ministry of Land, Infrastructure and Transport Japan's data. Only West Germany's data during 1983-1991.)

famous and fashionable that such artists who showed users' creativity on use in 1960s cannot afford to live.

Two things described below can be learnt from the 40 years history of conversion at SOHO district in New York City.

1. Conversion occurred as illegal movement of creative users to realize better and more convenient living environment and was gradually evolved based on matching relationship between demand – artists' demand to borrow larger and cheaper space – and supply – many vacant loft buildings after the decline of light industry –.
2. Such transformation of legal systems as to allow conversion later than actual appearance of conversion encouraged conversion market but changed major players of living environment and their motivation a lot in a short term.

### 3.2 Guidance Policies in Several Big Cities

Later NY city government came to regard conversion as a method of urban policies. The most typical example was conversion of vacant offices into flats at Lower Manhattan (LM) District. LM has been a center of US economy and lots

of financial companies have had NY offices there for a long time. However lots of companies went out to other districts such as Midtown where more modernized office buildings were located as IT made most of office works free from the physical distance from Wall Street etc. in 1990s. As the result of that vacancy rate of office buildings there exceeded 20% in the middle of 1990s. Such increase of vacancy rate lead to the decrease of daytime population which could cause the increase of cost to maintain the safety and the decrease of tax income. In order to break such a vicious circle the city government started the promotion of conversion from offices into flats. Concretely the government regarded such conversion as one of the important methods for revitalization plan of LM and started tax reduction and exemption in case of such conversion in 1995. Consequently more than 50 former office buildings were converted into flats or on the way in 2001.

Promotion of conversion is regarded as an effective urban policy not only in New York. For example Sydney city government announced three kinds of methods to increase residents in its declining central district and revitalize there

in 1995 and one of those was to encourage conversion from former use of vacant buildings with no demand into residential use with deregulation such as deregulation of floor ratio in conversion's case, the change of building regulations to performance-based ones, simplification of the permission procedure, deregulation of parking etc.. Also in Paris after the policy of deregulation and subsidy to promote conversion from vacant offices into flats in the central district had been announced in 1994, its land use plan was revised and a new subsidy program was established. Also in London the city government executed reduction and exemption of value-added tax in case of conversion in 1994, classification of conversion possible with no permission in 1998 and tax reduction in case of investment in conversion in 2001.

It can be said that revitalization of the declining central district of those big cities has evolved with conversion thanks to such policies to encourage investment in conversion (Table 3-1) as well as rather strong demand of people to live in convenient central districts. Taking an example of London, 5000 housing units had been supplied with conversion in the latter half of 1990s. In Lower Manhattan's case, 7% of total floor area of former offices had been converted into flats during 1995 – 2000.

Based on the review of such promotion policies of conversion in big cities, two common conditions can be pointed out.

1. As too enough floor area for office use was supplied, the vacancy rate of office buildings had increased. At the same time there was users' strong demand for living at the central districts of big cities.
2. The future image of cities had been transformed from the viewpoint of city governments' basic policies. Namely it is the recent image of cities that various human activities can be vigorously evolved there without being functionally divided while the former image was so functional as to locate working places intensively near the city center distant from housing area developed in the suburbs.

#### **4. INTEGRATED APPROACH TO COMBINE USERS' CREATIVITY ON USE WITH THE IMPROVEMENT OF BUILT ENVIRONMENT**

##### **4.1 Scope of Consideration to Realize Conversion**

In the improvement of built environment combined with

users' creativity on use of existing buildings, the scope of necessary consideration for the related industry differs from what they have been used to. Firstly, such improvement projects will not be necessarily construction ones. In conversion projects' cases various non-physical services shown below need to be introduced to organize people's creativity on use. How to integrate those services in the execution process is the point.

1. Diagnosis and assessment about physical / non-physical condition of use
2. Consultation on life style, community management as well as asset management
3. Real estate marketing such as matching service between demand and supply
4. Financing

Even in construction phase, the scope of order can differ much. Construction in conversion projects can sometimes be very small one such as repair and in other times so big ones as completely new building. The objects to be dealt with in construction can include not only a building but also furniture and exterior. And also what kind of objects are included differs from project to project. Therefore a project team composed of some kinds of construction works and components must be specifically organized to each project. In order to follow such a situation effective teaming should be pursued based on clarification of the purposes and targets of conversion projects

Table 3-1 Promotion Policies of Conversion in Three Big Cities

	London (UK)	Chicago (USA)	Sydney (Australia)
Deregulation		Permission to the bedroom with no window. Reducing ventilation requirement to half. Both have started since 1999.	Increasing the floor space ratio in case of the residential use. Flexible requirement for parking in case of conversion projects. Simplifying the application of conversion projects.
Taxation	The partial exemption to the renovation of listed buildings. The exemption from VAT to the renovation of all buildings since 1994. The deduction for investments to conversions since 2001.	Real estate tax will be fixed for twenty three years if the value of real estate increases by the following subsidy	
Subsidy	English partnership is subsidizing conversion projects by Housing associations.	Chicago city is financing the twenty percent of converting construction cost at most if the building locates in TIF district.	
Note	In planning consent local authorities require allocating affordable housing units to conversion schemes.	The developers applying the subsidy are required allocating social housings or job training center in the conversion, or employing the minority and female workers at a fixed rate on the job site. Obtaining profits from converted buildings, they distribute to Chicago city.	The conversion is one of three policies to revitalize urban center in Sydney.

#### 4.2 Issues to Be Tackled in an Integrated Manner

As is mentioned in Chapter 3, such combination of users' creativity on use with the improvement of built environment as conversion can be effective by policies' leading on one hand. On the other hand existing regulations can be obstacles against the change of existing buildings use. Therefore not only such transformation of the industry as mentioned above but also the changes of policies are much important for effective combination. As for policies, they have so much closed relationship with various matters such as physical conditions of cities, people's life style, etc. that integrated approach should be introduced in policy-making.

Issues to be tackled in an integrated manner can be described as shown below.

##### 1. Issues to be dealt concerning urban policies

As for conversion from offices into flats, it is still difficult to estimate project risks in advance because of the lack of actual experiences in the market. For example not all the administrative treatments in case of the change of building

use are clear for those who plan conversion projects. Some of administrative treatments can make permission process complicated or make construction cost higher. In other words to clarify and smooth administrative procedure in conversion's cases can be effective.

But when the changes of policies are discussed, the effect of the promotion of conversion in a district should be carefully evaluated in advance. For that, taking an example of conversion from offices into flats, the impact of the residents' increase and the working places' decrease should be estimated. For, the former can make the demand for medical, welfare and daily commercial service stronger and the latter can discourage the enlargement of employment in the district.

##### 2. Issues to be dealt concerning building stock management policies

In Japan although almost policies related to built environment have been concentrated on new-building activities, such situation must be changed soon. Based on the

results of our feasibility studies on conversion in Japan, four concrete points to be discussed concerning building stock management policies can be clearly pointed out. (Ref. 1,2 and 3)

Firstly, flexible response according to the actual situation of existing drawings and documents of existing buildings should be considered. For, although in case of conversion local authorities require all the drawings and certification documents made when the building completed, there are many buildings which have not enough drawings and documents. In such cases, building owners are apt to give up more effective use of their property by conversion because of the high cost to prepare all required drawings and documents again before the final decision of conversion. And as the result of that lots of buildings can continue to be unused as well as unsafe and give bad influences to their surroundings in the cities. Therefore in some senses how to lighten the requirements by local authorities had better be considered and in other senses technical or financial support for the necessary investigation of existing buildings had better be given by public sectors.

Secondly, the priority about the building owners' duty to follow today's building regulations should be reconsidered. For, although lots of existing buildings don't meet all the today's regulations because building regulations have been much changed since those buildings were completed, Japanese building law requires building owners to almost entirely follow today's regulations when they are going to renovate or convert their own buildings. It usually means much cost which can discourage owners' will to largely improve their properties. Therefore in case they regard any improvement of existing buildings as better than doing nothing, the qualification of building owners' duty based on a kind of priority policy should be realized.

Thirdly, research and development of anti-seismic diagnosis should be encouraged. When such priority as mentioned above will be discussed, the duty to follow today's anti-seismic regulations must be priority in an earthquake prone country, Japan. But there must be crucial difficulties in case the original drawings will not be found. For, without drawings it would be much difficult to precisely know the size or the arrangement of steel structural elements and reinforcement bars hidden by fireproof layers or concrete. Therefore low cost and simple technologies to know the

actual conditions of such hidden building elements could contribute much to the promotion of more effective use of buildings with renovation or conversion.

Fourthly, the improvement of built environment with diminishing stories or floor area of existing buildings and the effective use of the gap between two buildings should be regarded as new alternative methods. Our feasibility studies on conversion made clear the effectiveness of such alternative methods. (Ref.1) One example is that natural lighting and ventilation can be improved with partial removal of existing floor slabs in some cases. Another is that anti-seismic performance and fireproof performance can be improved with the location of new devices at the gap between two buildings. As these methods are specific to effective use of existing buildings, they require quite new way of thinking from Japanese new-building oriented industry. Therefore public sectors had better lead researches on the efficiency of such new methods and open their results to public.

### **3. Issues to be dealt concerning housing policies**

As conversion from offices into flats (Fig.4-2), for example, means new housing supply in a district, it must be strongly related to housing policies. It should be taken into account that housing by conversion can have different possibilities from merely new housing because it is realized with renovation of various existing buildings. So when public policies will promote such conversion, the promotion had better lead the realization of such conversion's specific possibilities. Concretely in case of housing by conversion such matters should be taken into account as various type of housing near the city center, low rent housing at convenient places, home office type housing and so on. And more, public information service on such specific housing to those who would like to live near the city center should be established in order to make the supply meet the demand.

### **4. Issues to be dealt concerning legal treatment of property right**

In many cases conversion cannot be realized without such smooth coordination of complicated rights of use and ownership concerning exiting buildings that can reduce project risks and ease financing. Therefore the way how to reach consensus about the constructions and the application of the related laws should be pursued. And it is important

for the government to lead professional discussion about the necessary revision of them.

### **5. Issues to be dealt concerning industry and technology policies**

Taking an example of conversion from offices into flats, it can have closed relationship with industry and technology policies from two viewpoints. The one is the activation of industry with more people living near the city center. The other is the necessary transformation of the building industry under such a market condition that no expansion of new building market can be expected. As for the latter viewpoint, concrete challenges for the building industry as well as necessary technology development for them can be clarified through experiences of conversion.

### **6. Issues to be dealt concerning professional education policies**

It is the transformation of professional education that necessarily accompanies that of the building industry. Professional roles needed in the effective use of existing buildings such as conversion are much different from those in new building. It is quite important to clarify what kind of knowledge and techniques related to professions should educate in the field of the effective use of existing buildings based on actual projects' experiences and to combine the results with the transformation of professional education systems in universities etc..

### **REFERENCES**

1. S. Matsumura et al., "Conversion Project Manual", X Knowledge Publishing Co., 2004
2. S. Matsumura et al., "Conversion ni yoru toshisaisei (Urban Regeneration by Conversion)", Nikkan Kensetsu Tsushin Shinbunsha Publishing Co., 2002
3. S. Matsumura et al., "Conversion ga toshi wo saiseisuru, chiiki wo kaeru (Conversion Will Regenerate the City and Change the Region)", Nikkan Kensetsu Tsushin Shinbunsha Publishing Co., 2004
4. Sharoun Zukin, "Loft Living: Culture and Capital in Urban Change", The John Hopkins University Press, 1982
5. Margarita Castro-Pereira, "Conversion of Buildings in New York and London – Planning, Politics, Profitability

and Preference –", Doctoral Thesis at The University of Tokyo, 200