Study on a preservation method of the regional characteristics of affected areas
-Through the restoration model production workshop in Rikuzentakata, Iwate Prefecture-

Kazuki Isomura[1], Osamu Tsukihashi[2], Takayuki Tomobuchi[3]

[1] Graduate Student, Dept. of Architecture, Graduate School of Engineering, Kobe University, M. Eng.
[2] Assoc Prof, Dept. of Architecture, Graduate School of Engineering, Kobe University, Ph. D. Eng.
[3] Adjunct Assistant Professor The COC+ Promotion Office , Wakayama University, M. Eng

Abstract

In recent years , large-scale catastrophes happen frequently all over the world. Hence, how to preserve the regional characteristics before the disaster has been an important theme.

The authors have continuously run a support project in several the disaster-stricken areas where suffered from the Great East Japan Earthquake in 2011. The purpose of project is preservation the regional characteristics by using models of the towns. The model making is based on the memories of the local residents who had lived there before.

The subject of this study is the restoration model production workshop which was conducted in Rikuzentakata, Iwate prefecture, in September, 2013

The purpose of this study is to clarify the effectiveness and also the characteristics of this preservation method. The first part of this paper reviews the process of the method and the results of the workshop, with the questionnaire results for the residents, and then the second part compares other measurements, in order to show the characteristics more clearly.

This study finds that this method is effectively able to preserve the regional characteristics comparing to other measurements. This method can record Memory of many people at the same time, can share the memory to many people, can induce communication to talk about memory.

Keywords: Model; workshop; Preserve; characteristics; Memory

1. Introduction

The authors of this report conducted a project called The Lost Homes Project (LH). The main activity of the project is the restoration of disaster-stricken areas using a 1/500-model production. This model is produced on the basis of the before disaster memory heard from local residents. [1] Many areas suffered by the Great East Japan Earthquake and regional space was lost. The purpose of this activity is the preservation and passing on of such area's landscape and townscapes, which can be seen as a living culture, for and to next generations.

Although the purposes as well as ways of the activity are various, activities for the preservation of regional characteristics such as this have been done in various areas before[2,3], including disaster-stricken areas by the Great East Japan Earthquake[4,5] and areas where regional space was lost because of various other reasons.[6,7] In this study, the way of regional characteristic preservation is determined as following: For a certain goal, information of and about a certain place is gathered, processed and shared. One of these ways of preservation is the LH, which hasn't been been fully characterized yet. So the purpose of this study is, to find out which values preservation

Contact Author: Kazuki Isomura, Graduate Student, Dept. of Architecture, Graduate School of Engineering, Kobe University, M. Eng.
Address: 3-2-14-204, Fukadacho, Nada-ku Kobe-shi, Hyogo, 657-0038, Japan
Tel: 080-1901-9872
e-mail:Iskazu1020@gmail.com

Fig.1. Restored model of the center of Rikuzentakata City before the disaster

methods using models such as the LH have for disaster stricken areas. Furthermore, it tries to find out, what kind of values can be found within the activities of LH itself.

RESTORING OLD PRIVATE HOUSES WITHOUT ANY HISTORICAL DOCUMENTATION: Implemental framework and case study at No.47 Hang Bac street, Hanoi

To Kien
(Doctoral Graduate and Research Associate, Kumamoto University Lecturer. National University of Civil Engineering in Hanoi)

2. Methods

First, this study will show the process of the Town of Memories Workshop [TMWS], which is on of the activities of the LH. Then, it will present the recorded results of the TMWS conducted in Rikuzentakata. It will also, by comparing it with the process and results of another case studyz (model), further show its characteristics.

The subjects for the comparison were chosen by the following three conditions:

[1] A case is a model for preservation where regional characters was used

[2]A case which target the area of /around Rikuzentakata

[3] A Case that recreated lost property (including buildings, landscapes etc.) by using materials such as testimonies of residents

Table 1.Name of activity and object chosen for the comparison (by the authors)

A case is a model for preservation where regional characters was used

Activity Name	Activity Organization
"Machizukuri Oral History" research in Kiki, Old Yuki-cho, Tokushima Pref.	Waseda University Haruhiko Goto Laboratory
Production of Ishinomaki City coastal areas 3D Model by 3D printer	Ishinomaki Senshu University Tamaki Masumitsu, Satoshi Takahashi

A case which target the area of around Rikuzentakata

Activity Name	Activity Organization
The Great East Japan Earthquake photo preservation project	Yahoo Japan Corporation
The Great East Japan Earthquake Archive	Tokyo Metropolitan University Graduate School of System Design Faculty of Watanabe, Hidenori Associate Professor
NDL the Great East Japan Earthquake Archive (Hinagiku)	Ministry of Internal Affairs and Communications , National Diet Library
Memories of 3.11 lamentation —Large tsunami and nuclear power plant , a giant earthquake which 71 people were to experience	Tohoku Gakuin University Kanebishi Kiyoshi Associate Professor Tohoku Gakuin University 'record of earthquake disaster project'
Memory to the future	Google
KAHOKU SHIMPO earthquake disaster archive	KAHOKU SHIMPO PUBLISHING CO.
3.11 reconstruction support project "Information ranger"	Public Interest Incorporated Association Tasukeai Japan
NHK The Great East Japan Earthquake Archives	NHK
Tohoku Memories Photo Studio	Rafco Inc.
We want to tell now , " thousands of voices ."	The Asahi Shimbun Company
"Michinoku Shinrokuden" the Great East Japan Earthquake Archive β 1.0	International Research Institute of Disaster Science
3.11 Marugoto Archives	National Research Institute for Earth Science and Disaster Resilience
Hisaichi deno Kiki-Kaki 101 (101 Verbal records at disaster areas)	The Tokyo Foundation Approved Specified Nonprofit Corporation Network for Coexistence with Nature

A Case that recreated lost property (including buildings, landscapes etc.) by using materials such as testimonies of residents

Activity Name	Activity Organization
Ground zero-sarugaku cho Restoration Project	Yagura-kai (Meeting of Ground zero-sarugaku cho survivors) , Hiroshima City University , Hiroshima City Industrial Promotion Center, KNACK IMAGES PRODUCTION , Hiroshima Institute of Technology

3. LH and TMWS
3-1. Process of LH and TMWS

The main activities of LH is to reproduce the affected areas from before the disaster in form of a model at a scale of 1/500.The model is mainly produced by Japanese university students who are majoring in the fields of architecture and urban planning. First, in consultation with local residents, it will be determined to which extent the work is going to be done. Then, the model is going to be produced using Styrofoam on the basis of maps as well as areal photographs of the pre-disaster region.The finished model will be transported to the place in case, then TMWS is conducted and the model presented to the local residents. After that, on basis if the model, the locals will be interviewed about how the area was before the catastrophe struck. Verbal records from the interviews will then, if related to certain places, shortened, written down on a small plastic flag and then put onto the respective places on the model (Flag of Memories [FM]). Long verbal records (Tweets) however will be written down on a specific sheet. In addition, in accordance to the verbal records, by using coloring, no matter how detailed, places and sceneries such food stalls for festivals, Dashi or cherry trees can be added to the model. We call it "Tsukurikomi". By doing this, the sceneries and atmosphere of the time before the disaster hit the area can be recreated and preserved. (Coloring, Tsukurikomi) Record of the FM
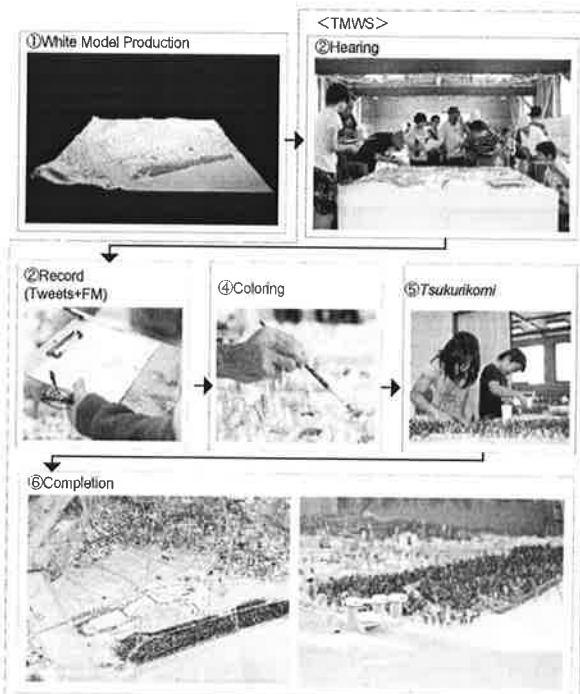

Fig.2. The Process of LH.

and the Coloring and the *Tsukurikomi* can easily be done, so it also possible for the locals to carry it out themselves. By using a method like this the disaster stricken areas are reproduced in form of a model in collaboration with the local residents. The finished model can then be displayed at local homes or for example abroad, to convey the curent situation of the affected areas as well as to show how exactly the disaster affected the area.

3.2. TMWS in Rikuzentakata

In the present study , we show the results of the TMWS conducted in the city Rikuzentakata of Iwate Prefecture, which amonst all LH activities showed a particular great resonsance and participation rate. In this TMWS a model of the central part of Rikuzentakata , which is located in the southest part of the Iwate Prefecture along the coastal area, was reproduced. Rikuzentakata received a devastating damage from the tsunami in 2011. 3368 households were affected and more than 1700 people lost their lives. Takata Matsubara, which was a beautiful seaside park had disappeared , leaving behind only a " solitary
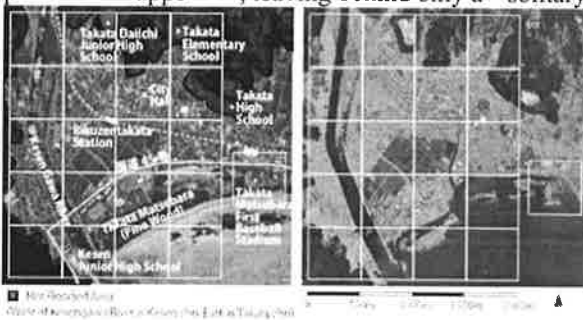

Fig.3. TMWS in modeling range view of Rikuzentakata

Fig. 4. position view of the recording and storage of the flag in TMWS in Rikuzentakata (Color Meaning :
❋ = name , = memories , ● = disaster , ● = tradition , ● = environment)

Fig.5. Position View of the *Tsukurikomis* and Verbal Records in TMWS in Rikuzentakata (●: Tweet , ◆: *Tsukurikomi*)

Table 2.Examples of the FMs and Tweets

FM-ID	FM Cycle	Verbal records(FM)	Tweets-ID	Verbal records(Tweets)
RTZ3-234	Yellow	Dashi were waiting me in front of my house.	3-12	When I was in elementary school , I had to prepare the Tanabata festival half of the summer vacation. The other half was forced to homework. The topic of today's elementary school students is that sports clubs can not survive. However , there was no such thing around the time of our children. Preparation of Tanabata was the opportunity to make an up and down relationship with the people of the district .
RTZ3-241	Yellow	The collision place of Dashi.	3-17	We prepared for the Tanabata and held the festival, had drunken everyone until the date changes. in the community center of Kamiyoka-machi.
RTZ3-244	Yellow	Kamiyoka-machi vs Ara-machi is traditional Battle.	3-38	There are four Dashi for each village. During the day of August 7 days of the lunar calendar , there was a festival floats hit at Yoke-machi street.

Fig. 6. Crafted *Kenka-Tanabata* Festival Float
(Model[*Tsukurikomi*] the Verbal record of Table 2)

pine tree of miracle " .

In TMWS two models were produced. One reproduced the areas from the northeast of Kesen-cho up to the center of Takada-cho. The size of the model measured 5km from north to south and 4m from east to west. The other one reproduced the area around Takata Matsubara first stadium and measured 1mx1m. TMWS was held for 7 days, from September 2nd (Mon) to 9th (Sat) in 2013, and the number of participiants/visitors amounted to 1669 people. In one week, 3618 Flags of Memories, 747 Tweets and 74 *Tsukurikomis*

were produced. . (Fig.4, 5, 6 and Table 2.)

4 . Comparison with other methods
4-1 . Case using a model for the preservation of regional characteristics

First , TMWS will be compared to a case study using another activity model. By doing this, the process of the saving of regional characteristics as well as the special characteristics of the model can be demonstrated.

The Subjects of comparison are, as can be seen in Table 1, the " Oral History Town Planning (*Machidukuri Oral History* (MOH))" project of Old-Yuki-cho in Tokushima Prefecture, and second a project conducted in Ishinomaki where a models was produced by using a 3D printer. In the former verbal records where used as material for producing the model. The verbal records are written down on a board that is put on top of the model. In the latter though, no interview whatsoever was conducted . The Model has been created by only using data from previous maps and photographs from before the disaster. In this case, as a result the scenery of the streets and city were saved. In TMWS, not only oral testimonies in form of interviews etc. were used, but also artifacts and data. Because of this, it functions as a medium for further recordings of the verbal records. The Model is used as foundation to plug the Flags of Memory with the written verbal records on it, on. Also , based on the verbal records tweets are made and a further detailed reproduction of the landscape is possible (*Tsukurikomi*).

From the above , two things were made clear. First, these models contain three characteristics of the process of preserving regional characteristics: "oral materials ," " recording as a medium ", " saved artifacts ". The other one is , that all three them apply to TMWS.

4-2 . Comparison with a preservation technique that targets the same area

Next, a comparison of the cases (seen in Table 1) from the areas in and around Rikuzentakata with TMWS is conducted. Through this, it can be made clear what kind of values this model has by directly comparing it to other methods.

In this survey it was found at that, even though a lot of preservation methods are used in Rikuzentakata, a method such as TMWS that uses models and replica to recreate regional characteristics has not been conducted yet. It can therefore be said, that perserving activities of Rikuzentakata such as TMWS are greatly valuable for the region. However , the landscapes recorded by this model are not as precise as for example as photos and videos .

By reconstructing the areas how they were before the disaster, it is made possible for everyone to experience those landscapes from various angles and distances. Through the birds eyese view, even local residents can see their city from never seen before angles (Fig.1.), and when going closer see the well known place one grew up and grown familiar with (Fig.6.). Results of questionnaire conducted with participants of TMWS shows, that visitors can freely look at the model from all kind of view points and directions. (Fig.7.) Photographs or pictures, which were used in another case and which show, how you can survey the the area from before the disater from only one view point. A relatively similar case, is one where the characteristics were preserved by using Google Maps and Google Earth[8], and then put as well as shared on different homepages. However, in the case of using Google Earth, things such as the difference of the height of mountains could be preserved, but details such as shapes of individual houses etc. could not (because aerial photos only are used). Therefore, it can be seen, that the possibility of looking at the landscape etc of the pre-disaster areas from different angles and distances, is the values of using models as a method of area characterstic preservation.

In addition, as can be seen in Fig. 3, it was found out, that in the TMWS carried out in Rikuzentakata, in comparison to similar activities which can be seen in Fig. 1, a great amount of verbal records (FMs and Tweets), where gathered and saved.

Table 3. regional storage technique data intended for the regions, including Rikuzentakata

| Name	The Number of Record	Types of records	How to communicate	Notes
TMWS at Rikuzentakata (FM) (Tweet) (Tsukurikomi)	3618 741 74	Writing Writing Model	Exhibition with the model Binding 'Publish on the web (+map) Exhibition with the model	The number of records in middling range
The Great East Japan Earthquake photo preservation project	2714	Photograph	Publish on the web (+map) Exhibition	The number of records in the entire Rikuzentakata
The Great East Japan Earthquake Archive	25	Photograph Writing Picture	Publish on the web (+Google Earth)	The number of records in middling range
NDL the Great East Japan Earthquake Archive (himagaku)	17234	Photograph Website Voice Picture Writing etc	Publish on the web (+map)	The number of hits by searching in the Rikuzentakata
Memories of 311 lamentation —Large tsunami and nuclear power plant , a giant earthquake which 71 people were to experience	1	Writing	Binding	The number of memoirs of the people at Rikuzentakata
Memory to the future	4264	Photograph Picture	Publish on the web (+map)	The number of records in the entire Rikuzentakata
KAHOKU SHIMPO earthquake disaster arch	415	Photograph Picture	Publish on the web (+map)	The number of records in the entire Rikuzentakata
3.11 reconstruction support project "Information ranger"	2	Picture	Publish on the web	The number of records in the entire Rikuzentakata
NHK The Great East Japan Earthquake Ar	94	Photograph Voice Picture Writing	Publish on the web (+map)	The number of hits by searching in the Rikuzentakata
Tohoku Memories Photo Studio	795	Photograph	Publish on the web	The number of records in the entire Rikuzentakata
We want to tell now , " Thousands of voices ”	8	Photograph News	Publish in the newspaper Publish on the web	The number of hits by searching in the Rikuzentakata
"Michinoku Shinrokuden" the Great East Japan Earthquake Archive β10	637	Photograph News	Publish on the web (+map)	The number of hits by searching in the Rikuzentakata
3.11 Marugoto Archives	173	Photograph Picture Website	Publish on the web (+map) Writing	The number of hits by searching in the Rikuzentakata
Hisaichi deno Akari wai 101 [101 Testimony at disaster areas]	70	Photograph Writing	Publish on the web	The number of hits by searching in the Rikuzentakata
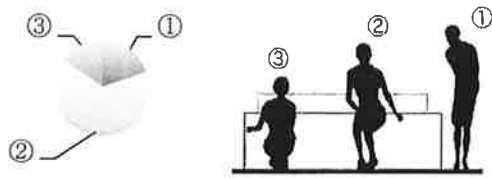
Figure 7: TMWS in Rikuzentakata visitors questionnaire (View of the model was more impressive)

The FM in particular, by putting them on the model in accordance to the presented landscape, make it possible to view it from all kind of different angles. However, individual verbal records are preserved more detailed in other cases. TMWS rather than preserving one place in greater details, aims to and works better for preserving a bigger area in a more quantitative and simple way.

4-3. Comparison with the technique that was restored from such verbal records the currently non-existent space

Finally, this section compares this methodology with other two different restoration methods: a method that was employed to reproduce the site of atomic bombings of Hiroshima in 1945 with using computer graphics (CG) animation and a method to reproduce the former appearance of an old house with using the drawing and CG animation technology.

The processes of the two methods for comparison are almost same: first, carrying out data collection (including interviews), second, charting the former space on the basis of the data and third, carrying out data collection again with using the chart made in the second step. Through repeating the process above, the methods, in fact, can reproduce the appearances of former spaces in a high accuracy. We found the following three specific features for the TMWS approach, through the comparison with the two different approaches.

[1] The data collection is conducted for an unspecified much larger number of residents.
[2] Participating in the data collection process is relatively easy for residents.
[3] Preserving the products of this method is relatively difficult.

Regarding the first point, whereas to reproduce the former space in a high accuracy it is necessary to focus on some specific persons who are substantially familiar with it for interviewees, the TMWS approach can be conducted for more people because the method reproduces only the arrangement of houses, the rough shapes of each buildings and so forth that can be reproduced in a shorter time.

In regard to the second point, the data collection

process of the TMWS approach is composed of handcrafting the model, coloring the model with paints and writing their own memories on flags and inserting them in the model that can be done even by children, while the other restoration methods with CG animation or 3D printer technology need some professional knowledge, skills and equipments. In addition, as such professional methods need to be conducted in a well-equipped institutions, it is basically difficult for the general public to participate in the process directly.

Finally, regarding the third point, the model is made of soft materials such as polystyrene foam that can be processed easily, hence, it can deteriorate more easily, comparing with electronic data such as CG animations. In addition to this point, the TMWS method needs a space to keep the model. Therefore features of this method make it difficult to preserve its processes.

4-4 . Advantages and disadvantages of TMWS

Table 4 summarizes its advantages and disadvantages of the TMWS methodology.

Table 4. Advantages and disadvantages of TMWS

Characteristics	Advantages	Disadvantages
Oral materials	· Three-dimensional spatial form of pre-disaster areas can be seen from different angles and distances.	· Detailed informations of landscapes and verbal records can not be conveyed
Recording as a medium	· By putting flags onto the model, larger quantities of information can be recorded than by writing them on a paper or a plate. · Townscapes as well as landscapes of the model and the Flags of Memory can be preserved as a set · Participation is easy and possible for everyone (method of preservation is easy and mistakes are easily corrected) · Results are easy to share (presentation probable right after finishing the product)	· Detailed informations of landscapes and verbal records can not be conveyed.
Saved artifacts	· Three-dimensional spatial form of pre-disaster areas can be seen from different angles and distances.	· Detailed informations of landscapes and verbal records can not be conveyed. · Not suitable for long-term storage · Requires storage space

5.Conclusion

In the present study , the results of Rikuzentakata was compared with other cases in the TMWS process and TMWS result. It revealed the storage method of the positioning of the region in the model. In addition , it shows the characteristics of TMWS as a method. In the future, depending on the challenges, the way, the method and how to use the large amount of acquired data will still be discuss.

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