Soundscape Design

A Case study of soundscape in Huwei, Taiwan

Chia-Li-Lin*, Li-Shu Lu**

Graduate student,
Department & Graduate School of Computational Design,
National Yunlin University of Science and Technology,
g9934711@gmail.com
** Assistant Proferssor,
Department & Graduate School of Computational Design,
National Yunlin University of Science and Technology,
li-shu.lu@gmail.com

Abstract: Sensual is the way people understand the world and construct its context. With the advance of science and technology, it has been extended in sensual experience, affecting the aesthetic view, design methods and art creation. Generally, people count on seeing more than hearing. However, under the of academics work on the cultural context of society reflected by soundscape, a new hearing experience has been contributed. [25, 28, 34] Thus, this paper focuses on forming soundscape of Hu-Wei, one of the Taiwan sugar industry relic, through both theory and empirical investigation. Data from document and artifacts, field study and in-depth interview were examined through the viewpoint of Acoustemology, Environmental Sociology, Anthropology and Digital Humanities. In this study, the analytical framework contains: soundscape triangle - soundmark, Keynote and Signal; ecological triangle - People, Space, and Activities; and the basic concepts of cultural anthropology; were used to build a sound spectrum of Taiwan industry relic. The main outcome of this paper are as followed: 1) genres of soundscape context of Taiwan industry relic would be presented: people-oriented soundmark, space-oriented soundmark activities-oriented soundmark ; 2) analyze and apply the association rules between sound objects, including sound objects classification(race, gender and organization, artificial, natural, habits and transportation), clustering(the period of Japanese rule for time clustering and historical buildings for space clustering) and applications. This paper puts forth a soundscape context of Taiwan industry relic as a reference for executing relevant researches.

Key words: Soundscape, cultural heritage, Digital Humanities.

1. Introduction

In early 1970s, Schafer run noise pollution courses in the Faculty of Communication, Art and Technology College of Simon Fraser University and tried to further understand the issues about sonic environment. Schafer proposed concepts about Soundscape, which means the Music of the Environment. Soundscape could be analyzed and designed as Social Text to improve the environment of sounds through auditory aesthetics or cultural experiences and promote people to consider the relationship between their own and environment, which could further develop the principles of acoustic design. Supported by Canada Council and UNESCO, the noise pollution course underwent investigation activities named "World Soundscape Project" and advocate the significance of

Soundscape. Truax thought that "An environment of sound" promotes the formation of "acoustic community"[32]. Westerkamp proposed the concepts of "soundwalk", which means listening to the sounds while walking[36]. During the processes of listening, sounds should be separated into individual elements and help to preserve the creativeness of sounds in the past as well as at present. Trorigoe reckoned that Soundscape is the basic strategy to preserve the heritage of nature and culture. When people pay more attention and concern to soundscape, sustainable development of cultures could be supported[29, 30]. However, many people criticized that "World Soundscape Project" overemphasized on the reception and analyses of sound object. "Sound object" and "sound event" concepts proposed by Schaeffer could elaborated on this point of view. "Object" could be divided into attack, body, and decay as well as physically divided into duration, frequency, fluctuation, and dynamics; "Event" refers to symbolic, semantic, and structural nature that associates with the larger subjects than itself [4]. To summarize, "World Soundscape Project" overemphasized the physics characteristics and neglected the differences of sounds. Nevertheless, Wang attempted to get rid of the physical measuring methods, which are fail to present the contexts of the event, unable to explore the dimension of people's livelihood, and even incompetent to propose questions that may benefit the environment, and extended Schafer's concepts by further connecting Soundscape Triangle- soundmark, signal, and keynote to Sociology of Environment[36]. According to Tilly's Ecological Triangle- human, space, and activity, the soundscape could be divided into four categories: historic sound, cultural sound, social sound, and natural sound, which rating the positive value of soundscape. But holistic and systematic study on local environment is still deficient and the analysis structure is insufficient to explain the deep meaning and diversity of culture dimension[27]. Recent Soundscape in Taiwan is more tended to investigate into environmental sound preferences. However, as we start to collect meanings from the sound production of sound, music, or noise, based on the phenomenology's description and restore towards the experience, the sounds would one way reflect the cultural characteristics and one way involve in the affiliated local historical trace. With the footsteps of the historical and social cultures, we would then have a new explanation on the social culture's phenomenon, and a chance to reshape the image of the Soundscape. In the view of the situation described above, this research chose Huwei, Taiwan as the material of case study and according to Schafer, Tilly, and Wang's research to investigate to the soundscape meanings of Huwei's industrial ruins. We analyzed the characteristics of the soundscapes there and generalized its sound map.

2. Literature review

2.1 Soundscape : a new field for sensory research

Sensory perceptions enable human to feel the spatial and temporal sense of the environments they live in [21]. Each sense could construct a world and when sense systems cannot communicate with each other, specific sense's uniqueness and peculiar structure could be revealed [11]. Soundscape, as a new field for sensory research [6], is not merely one kind if concrete humanities and social sciences but also a subject that could reflect on space, time, and lifeworld. To understand the lifeworld, it is essential to realize that the world is not only the products of empiricism. It is closely related to the historic processes. Its connotation is actually the methods and media to understand the true perception in lifeworld rather than merely physiological phenomenon [21, 14, 20]. Through auditory sensory, we could percept sounds and understand the feelings and thoughts delivered between people and even construct cultural indicators through the production of sounds, musics, or noises to further reflect our values and the elements of cultural life [10, 1]. Thus sound is one of the media that could represent the cultural meanings. Expressed by symbols, sounds could produce specific meaning and be delivered in the society to influence our

physiology, psychology, perception, and behaviors [13, 31]. Once the sounds are preserved to reproduce any dimension of meaning, which may be historic dimension, humanities dimension, or changes of the city itself, they are regarded as important media that enable reappears of the past time [33].

2.2 Soundscape : a part of the cultural heritage

Human is a creature hanging between the webs of meaning. Cultures are exactly the web of meaning weaved by humans. It is the processes of realization, experiences, explanation, and reproduction that could deliver meanings to other people or express to share with others by symbolic system [8, 2]. But culture hides in the lifeworld and its existence could not be clearly detected [3]. Thus, culture is a context to be read and it needs diverse categories of understanding. Time and space is the basis of abstract or classification concepts that allows close integration of different society organization. Culture is the important foundation for human to realize and understand the lifeworld [16, 6]. The view of lifeworld depends on how far the web of meanings is. The further the web of meaning, the better the understanding is. This belongs to explanation science that explores the true meaning of culture rather than the experimental science that seeks for regularity. Cultures can only be shown by practical actions. The purposes of the actions are to investigate the literature texts and write ethnographic in the field in order to elaborate on the alteration, blending, and even hybridity of culture. By doing so, we can get close to different appearances of ordinary people's lives [18]. Through appropriate design, cultures emphasize the emotions, sensory, and the significance of values experienced by humans. Taking advantage of media technology, the culture characteristics could be memorized and delivered by different carrier to provide novel annotations on invisible deep meaning of culture and endow cultures with new vitality [22, 23]. Therefore, the memory of cultures relies on the incorporating practice of physical senses and the inscribing practice of technology to fulfill its inheritance and maintenance [5].

2.3 Soundscape : a Companion to Digital Humanities

As the developments of digital technology, the preservation and processing of words, images, sounds have gradually become easier. However, widespread digital technology products have posed another problem: excessive data [24]. Therefore, how to let various media data produce new meaning and influence thus has become a problem for digital humanities. Digital humanities field have tried to search for phenomenon hard to be observed, unimaginable issues, and unavailable research. Participation, observation and reflection are main methods to understand the context of data. Digital humanities take advantage of the basic mode of humanities sciences and their own research methods to analyze data. Nevertheless, digital humanities are apart from humanities calculation, which means they don't believe that statistics could provide resolutions to all humanities problems [17]. Several common search methods used in digital humanities include categorization, clustering, and link analysis [15]. The characteristics of these methods or tools are that they are available to all people and possess various links that could connect to diverse contexts. Digital humanities have tried their best to build up the environments of observed contexts, which allows users to conveniently produce a meaningful file according to the results of retrieval. By doing so, the richness and multiplicity of archives and records could be discovered, displayed, and observed [35]. The ultimate goal of digital humanities is to share rather than to construct. In addition, Ritsumeikan University established Digital Humanities Center for Japanese Arts and Cultures and has tried to spread Japanese culture and arts according to the concepts of digital humanities, which brings new thinking modes to the research of orientation national digital humanities

3. Method

This research mainly focuses on Qualitative Data Analyses. We construct the sound mapping of Huwei sugar refinery through according to its "soundscape analyses of historic contexts" and "collection of soundscape at present." Detailed explanations on related research are given in the following texts:

3.1 Overview of Case Study : Huwei, Taiwan

Huwei is the central town of Yunlin Country(Figure 1). Huwei has been one of important sugar-cane-growing regions in Taiwan. During Japanese occupation period(1895-1945), Taiwan had already set up a center for producing sugar and Huwei yielded the most production of sugar in Southeast Asia. Huwei thus was renowned for sugar and earned the name of "sugar city", which obviously shown its historic significance. In the past, you could hear the rumbles of Huwei sugar train while they shuttling in the communities. However, the center for producing sugar has declined and Huwei refinery became the only refinery that is still running. The working time for Huwei refinery has been reduced from three-shifts that covering every day over the year to only running from December to March, the sugar-producing period. Makungtso Line now is the only sugar railway line that is still running [37, 26]. Huwei's image as sugar city is vanishing, which may turn Huwei to become a city without memories. In view of this, Zheng(2011) used "The Heard & The Unheard: Soundscape Taiwan" as the spindle of exhibition and participated in the 54th Venice Biennial, which considered the roles sounds played in ordinary life and arts and themed "Illuminazioni." Among all artists that participated in the 54th Venice Biennial, Taiwanese artist Hong-Kai Wang invited the retired employees to return to Huwei sugar refinery for recording the sounds produced while sugar-producing processed in her works. These sounds include the operating conveyers, squeezing sugar cane, boiling boilers, running sugar trains, and various mechanical sounds. Through gatherers' senses, Hong-Kai Wang tried to allow the re-experience of sounds that could re-construct the landscape of memories. The main purpose of this work was to establish a lifeworld that is not image-based.
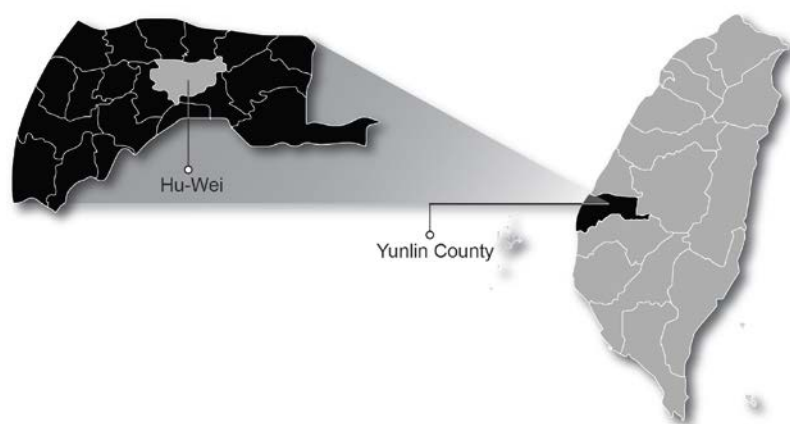

Figure 1. The Location of Huwei, Taiwan

3.2 Study Process

Stage 1: Analyze and conclude the historic contexts according to related literatures and texts.

Stage 2: Collect current soundscapes through fieldworks.

Stage 3: Construct sound maps according to the synthesis and continuity of the data in stage 1 and stage 2 to provide overall significance of observing local contexts. (Figure 2)
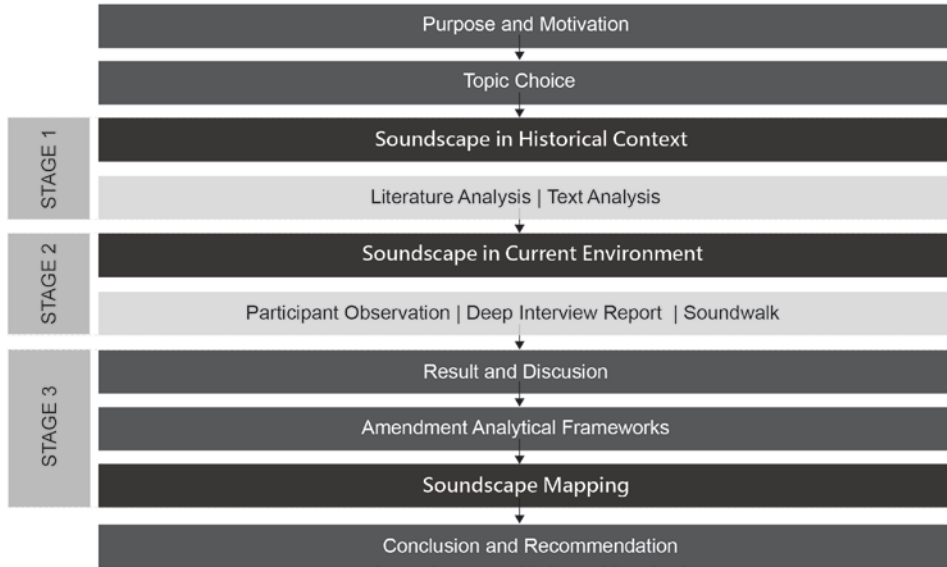

Figure2 Study Process

3.3 Analytical Frameworks

The theoretical framework used to evaluate sugar city- Huwei in this research is proposed by Wang. He extended and combined the concepts of Schafer's soundscape triangle and Tilly's ecological triangle to strengthen the tightness of sounds and social cultures (Table 1).

Table 1. The framework of research analyses

	soundmark	Keynote	signal
human			soundscape triangle[25]
space			
activity	ecological triangle[27]		

As shown in Table 1, the horizontal axis is derived from Tilly's ecological triangle, which includes human, space, and activity. Human is social actor that may include dimension of ethnic group, class, gender, and organization. Ethnic groups are bases on languages or geopolitical relations[27]. Classes are based on economic levels and social identities. Organization consists of members that engage in the same activities and try to fulfill the same social goal. Gender means the differences on physiology that form different social roles. Space is the bearer of society which includes natural and artificial products with diverse social functions. Natural-built products are purely the phenomenon caused by natural interpretations, which are named natural landscapes. Human takes advantage of natural sources to re-build artificial-built products, which could be named as cultural landscapes. Activities are the products of society, which include various social interactions with high-degreed division of labor. Social interaction, which may be cooperation, competition, conflict, trading, adaption, or assimilation relations, mentioned above means that individual and group hope to obtain the bi-directional response from other people or groups. To conclude, soundscapes in activity level are characterized by its mobile and restrictive feature. Longitudinal axis is derived from Schafer's ecological triangle, which includes soundmark, signal, and keynote and could be considered as the basic tonality of music[25]. Soundmark implies the objects that produce the sound and keynote is the characteristics and features of the sound. Signal is the meaning that the

sound represents. Senses are the media for us to realize and construct the world we live in. Here we focus on the auditory sensory and take sounds that we have ignored or taken for granted in the environment as keynote. The soundmark is the source of the sound, which is the most recognizable item and worthy of preservation.

4. Result and Discussion

4.1 Soundscape analyses of historic contexts

Infrastructure of sugar industry attracts people to visit. Owing to the crowd-gathering ability, many spatial arrangement and consideration have developed locally. We investigate the present the text data with different soundmark: human, space, and activity (Table 2).

Table 2. Soundscape analyses of historic contexts

Soundscape	Description
Human	Korean／Japanese／Taiwanese(Hakka、Taiwanese、Mandarin、Aboriginal languages)／storyteller／Military Dependents／taiwan Puppet Theater／Peasants and Workers／Geisha／Kamikaze／ Worker (Taiwanese)／ Senior Staff (Japanese)／ crossing watchman／ Sex workers／
Space	Anqing drainage and Wengua Bridge／ Huwei Iron Bridge／ Red Light District／ Dugout／Living Quarters／ Huwei Sugar Factory／Tongxin Park／Huwei Station／ Yu-mei Restaurant, Shin-ko Restaurant, Cho-sen Restaurant／Huwei Street／Wujiancuo Shrine／ Huwei Town Hall／Public Bathing／Huwei Office Building／ Huwei Official Mansion ／Bishopwood Tree ／Hare, Voles, Pheasant／Cane fields／Cicada／Black Drongo／Sparrow／Huwei Stream
Activity	sugar cane Train(Half Track-Gauge)／Tractor／Propaganda vehicles／Pedicab Tricycle／Bicycle ／Bullock-cart／Rickshaw／Pedicab／ ice sticks／leaves of sugar cane／Bell／Tatami, wooden sword／dart, wooden tray／hand-cranked ice machine／hide and seek／Radio／steam whistle／ Siren／ice machine／ Dating Machine／ Loudspeaker／Derailing Switch／X'mas／

4.2 Collection of soundscape at present

The decline of sugar industrial activities has brought about the problems of population loss. Local people began to arrange and consider the space utilization again. We investigate the problems encountered while presenting empirical data of different soundmarks, which include human, space, and activity (Table 3).

Table 3 Collection of soundscape at present

Soundscape	Description
Human	Japanese／Taiwanese(Hakka、Taiwanese、Mandarin、Aboriginal languages)／Taiwan Puppet Theater／Peasants and Workers／Buskers(Nakashi)／Worker (Taiwanese)／Crossing Watchman ／ Sex Workers／
Space	Huwei Iron Bridge／Red Light District／Living Quarters／Huwei Sugar Factory／Tongxin Park ／Huwei Station／Huwei Town Hall／Huwei Office Building／Huwei Official Mansion ／Bishopwood Tree／Hare, Voles, Pheasant／Cane fields／Cicada／Black Drongo／Sparrow／Huwei Stream／Dog
Activity	sugar cane Train(Half Track-Gauge)／Tractor／Taiwan's Funeral Strippers Dance for the Dead／Propaganda vehicles／Pedicab Tricycle／Bicycle／Bullock-cart／ Bell／hand-cranked ice machine／hide and seek／Radio／ice machine／Loudspeaker／ Rail ／Derailing Switch

4.3 Positive value

4.3.1 Historic sounds

During Japanese occupation period, there were many sounds that reflected the historic backgrounds of the times. Here we describe as the following: the sound that people speaking Japanese and Korean languages, different languages heard in Japanese high-class dormitory regions and Taiwanese dormitory regions, the sounds of aircrafts in air force base, songs sung by Geisha accompanied by instruments in the Dinners, Nakashi music, sounds of Huwei drama circus and story tellers, sounds produced while moving tatamis (Japanese straw mattress),

sounds produced while the cleaning rags wiping the doors and windows of the corridor back and forth, flapping and patting the tatamis with wooden swords, branches of Anqing drainage flowing through Wengua Bridge, laughter while children jumping into the Huwei Stream, choo-choo of the steam trains, notification rings while 3-shift workers to change shift on Huwei Street every day, Beiguan and Nanguan music sounds of Yi-Ge and Din-Tao, the sweeping sounds and prayers of Wujiancuo Shrine, people singing and dancing sounds in Japanese Harvest festival, fire alarm and air alarm sounds from Huwei Joint Offices, the engine sounds and bombing of the sugar refinery, sounds of machine guns and explosions, air alarms from bomb shelters. During the period of restoration, there are many historic sounds described as following: rainwater falling in the bottles and jars in the dormitories, bell ringing while commuting through wooden plank road of Huwei Stream Bridge, various local accents in the military dependents' villages, sounds from radio, laughter of children while playing hide-and-seek, sounds of stubbing ice from the containers while producing ice, sounds of ice sticks falling on the ground, sounds produced by hand-cranked ice machine, the sounds of bells rang and hawks produced by peddlers while riging bicycles, and the sounds of darts shooting on the rotating wooden tray. During the period between Japanese occupation period and the period of restoration, the historic sounds include the sounds of burning firewood in dormitory regions and public bathrooms, rumbles and tumbles made by Huwei Stream trains while passing by iron bridges, and the sounds of "Here we are at Huwei Station" broadcasted by the station masters of Huwei relay station.

4.3.2 Cultural sounds

The prayers from sugar-cane peasants before going to work, singing Kua-a-chheh(Taiwanese ballads) while working, and the chatting and discussion about the plot of the Outdoors Taiwanese Operas between peasants after they finished one-day work are all cultural sounds. During the Chinese New Year, folk song concerts, hawks from peddlers could be heard. Chants could be heard while Christmas. While International Puppet Festival, the sounds of the display performed by glove puppet artists from different places and child narrators speaking the dialogs of puppet performance could be heard. In Squeezing-sugar-cane carnival, there are many cultural sounds could be heard: the voices of tour guide, the rumbling of the truck that shipping sugar cane, the sounds produced while the pumping working, the sounds of employees walking down the iron staircases, sounds from the branches of iron tubes, the flowing and boiling sounds from the pots, the sounds produced by the conveyor belts of the production line, live music, Jeet Kun Do, Lion Dance Troupe, drumming to celebrating holidays, and the sounds produced while drinking and playing finger guess games. During Ghosts' Festival on the streets, chanting of the sutras, sounds of gongs and firecrackers, music from electronic amusing stage-car, and the sounds from the theater featuring movies.

4.3.3 Social sounds

Diverse languages, peddling sounds, bargaining sounds, rumbling sounds produced by the friction between railways and trains in the community, sounds produced by the switching points of the railways, pulsating-like beats produced by the machines, whistle sounds from the sugar refinery, frictions of Huwei Sugar Trains and Makungtso Line railways, train crossing sounds of Huwei Sugar Trains and High Speed Rail Trains, sounds of collision produced by bicycles crossing the Huwei Bridge which combine the laughter of children nearby, chatting sounds and folk songs, sounds produced by stepping on the fallen leaves, music from the arcades of Ton-Xing Park, Japanese music from coin karaoke machines, "Fur Elise" music sounds notifying people that the garbage

truck would come soon, which combines the Hokkien broadcasting sounds, the broadcasting sounds from Tzu-Chi's old recycling trucks, and election music and people speaking "Please vote for me" on the campaign vehicles are all social sounds.

4.3.4 Natural sounds

Natural sounds include the swaying sounds of leaves in the sugar cane fields, the activities of voles, hares, and pheasants, "bibo" sounds produced while burning the leaves of sugar cane, sounds of winds and rains produced while hitting at the iron houses by the rails, birdcalls herd in the dormitories in the morning, cicadas chirping and cricking jumping on summer afternoon, swaying and waving of tasselgrass flowers in the autumn and winter, the swaying sounds produced by Northeast monsoon hitting the leaves of bishopwoods tree in the winter, tasselgrass flowers swaying and the birdcalls on the stream beds of Huwei Stream, and dog barking by the abandoned railway tracks and in the dormitories.

5. Conclusion and Suggestion

Lifeworld is changing all the time and this characteristics especially highlights the importance of soundscapes. Changes of the policies significantly decrease the frequencies of different soundscapes, for example: decreased cultural sounds during imperialization, decreased social sounds during Martial Law period, decreased natural sounds during urbanization, fallow, and crop rotation. Many elements of soundscapes have already decreased a lot and even become extinct. Elevating the awareness of local sounds is one significant issues that would be concerned and managed in the future. Here we provide some suggestion for future research.

5.1 Revise of the framework and construction of the sound map

Culture is history-specific and temporal-specific and cannot get rid of the limitation of certain temporal and spatial condition as well as the influences of social structures and cultural contexts. We suggest to add basic concepts of culture classification to construct frameworks characterized of social culture structure features (Figure 3). Lives of ordinary people reflect various social cultures in different times. To clarify basic cultural facilities, organizations, activities, and various life styles of ordinary people, the following contents conclude the detailed soundscape constitution of Taiwan Sugar City (Figure 4). To reflect the developing contexts of history and society, we suggest to add time as a parameter and to continue the construction of soundscapes to allow the frameworks that analyze the construction of soundscapes to present the dynamics of sound maps (Figure 5).
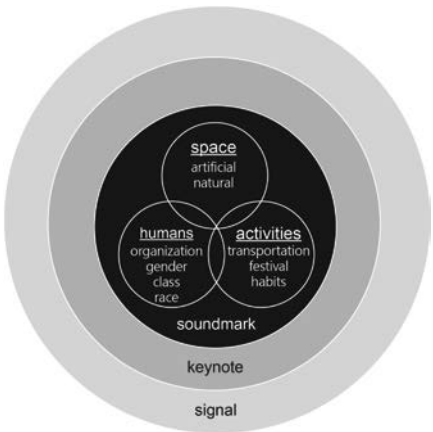

Figure3 Concept mapping
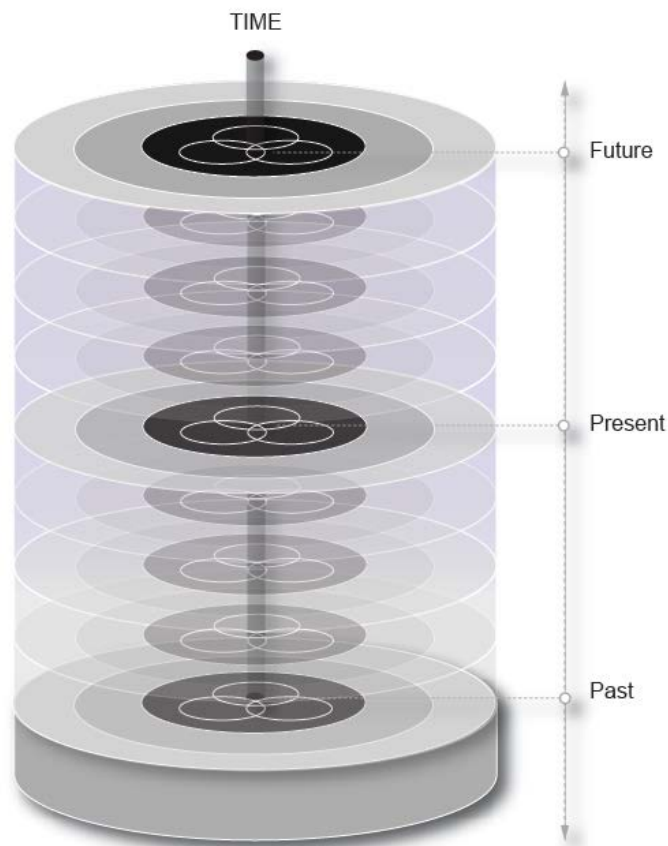
Figure 4 Soundscape mapping

Figure5 Timeline for Soundscape

5.2 Role transformation of soundscape

5.2.1 The front strategy of cultural resources protection

We had abundant resources without sense it, and we interfered but also destroyed them. Facing these frozen cultural resources, soundscape will be facing the shock as well. However, the level of science and technology skills has been rising and the deep going study of each field, through them, we can recuperate the cultural resources back their original appearances if we could trace back to their roots and pass them down appropriately; they might even develop to becoming better aspect of resources with bigger value than now. Just like our tracing and research to the soundscape; to preserve what is vanishing and bring back what was gone, then we will have the opportunity to reveal other meanings of these resources. We have to realize that the information received from no matter soundscape or landscape is indispensable. Culture is not only remembered while attaching to tangible asset. The intangible cultural assets like soundscape should be also like continuous soundscape as a part of cultural assets. However, the protective and developmental contents which enrich cultural asset are still waiting for more research methods and practices. This paragraph can be shown on the corresponding references. Trorigoe (2002; 2005) consider soundscape is the fundamental strategy to protect nature and cultural asset. When people pay more attention on soundscape, it will help the sustainable development of culture. This person's point should be brief as a correlation.

5.2.2 Cultural and creative response

No matter in which way of contents or modalities we must reflect it on different conservative aspects. We use sound as a medium, providing people with historical, cultural and social discourse through our inquiring exploration of sensory organ such as auditory, to come together, with culture in which cultivated entirely different era of comprehension, to bring about and reconnect an impeccable association between people and societal culture. Furthermore, as sound texts are retained, we, the people and the environment will be provided with sound vision through mutual connection which brings together past and present experience in a state of convergence. Thus, we can grasp a better command of system of social passage through the potent stimulus of memories and emotions. Creative purpose and content of art are for the representation of social phenomena and made by the development of the whole society (Peter, 1984). Via digital media to present themes or events, shaping the culture and art from the point of view of the digital humanities will bring social culture a distinct viewing angle, and kinds of carriers promote audience to a new way of thinking to seek common experience and pay more attention to the environmental relation. We can systematic all information or implication at large to restructure and present. On the other hand, we put more multi sense in our material, for instance, auditory version will show audience and listener entertainment and educational ideology in order to restructure point of view and reappear society.

Through our analysis of the case studies, we found that soundscape has the characterized of differance, the significance of the soundscape to produce change, because of the delay in the time and space differentiation. In the future, auditory version will no longer be the object of art's creation or attachment of articles but also be the material needing explanations. It may recall the audience and listeners' experiences beyond sense and even make audience and listeners comprehend realize past events.

6. References

[1]. Bauer, M. W. & Gaskell, G. (2000).*Qualitative Researching with Text, Image and Sound: a Practical Handbook*, SAGE Publications Ltd.

[2]. Carey, J. (1989) *Communication As Culture: Essays on Media and Society*, Unwin Hyman, Boston.

[3]. Chen, Y. Q. (2006) 圖解文化研究. Easybooks Publications, Teipei.

[4]. Chion, M.(1983) *Guide To Sound Objects. Pierre Schaeffer and Musical Research*[Online PDF] (Dack, J. & North, C. Trans.). Available at < http:／／www.ears.dmu.ac.uk／IMG／pdf／Chion-guide／GuideSectionI.pdf >[Accessed 3 March 2013]

[5]. Connerton, P. 1989. *How Society Remember,* Cambridge: Cambridge University Press.

[6]. Dreyfuss, L. J. Tardieu, H. Nicod, S.Guerrand, A. Giboreau. (2005) *The soundscape of public places : a new field for sensory research*, European sensory network.

[7]. Durkheim, E. and Mauss, M.(1963) *Primitive Classification*. Chicago: University of Chicago Press.

[8]. Geertz, C. (1973) *The Interpretation of Culture*, Basic Books, New York.

[9]. Geertz, C. (1983) *Local Knowledge: Further Essays in Interpretive Anthropology*, Basic Books, New York.

[10].Glass, L. (2003) *I Know What You're Thinking: Using the Four Codes of Reading People to Improve Your Life.* Wiley & Sons.

[11].Gong, J. J. (2006) *Dispositif: Merleau-Ponty at the Limits of Phenomenology of the Body*, Psygarden, Taipei.

[12].Gu, M. R. (2008) *Reading literature landscape: floating light in Huwei river*,Council for Cultural Affairs, Executive Yuan & Unitas, Taipei.

[13]. Hall, E. T.(1965) *The Silent Language*, Fawcett Premier.

[14]. Herzfeld, M. (2001) *Anthropology: Theoretical Practice in Culture and Society*, Mass. Blackwell Publishers, Malden.

[15]. Hsiang, J. & TU, F.E.(2011) *Introduction: What is Digital Humanities*, National Taiwan University Press, Taipei.

[16]. Huang, Y. K. (2008) *Anti-King into the deep forest: anthropological contemplation. Theory and Practice.* San Min Book Co., Ltd., Taipei.

[17]. Jin, G.T.(2011) *The Theoretical Foundation of Digital Humanistic Studies*, National Taiwan University Press, Taipei.

[18]. Lin, W. Y.(2007) *From cockfighting to the laboratory: The Postmodern Turn, Interpretation and Implementation*, Conference on The Postmodern Turn and Qualitative Research. Nanhua University, Chia-yi.

[19]. Lin, W.Y.(2007) *Realization of Trainees' Agency in the Driftworks of Engineering Laboratory*, presented in Workshop on Ian Hacking. NTHU, Hsin-chu.

[20]. Lock, M. (1993) *Encounters with aging : mythologies of menopause in Japan and North America*, University of California Press, Berkeley.

[21]. Merleau-Ponty, M. (2005) *Phenomenology of Perception.* (C. Smith, Trans.), Routledge, New York (Original work published 1945.).

[22]. National Science Council (2013) *Digital Humanities Research Program* [Online PDF]. Available at ＜ http:／／web1.nsc.gov.tw／file2／INTRAFILES／announcement／dest／402881d039e4827a013a3e51027401e5／1349665227317.pdf ＞[Accessed 3 March 2013]

[23]. Norman, D. A. (1988). *The psychology of everyday things*. New York, NY: Basic Books.

[24]. Rosenzweig, R. (2003)*Scarcity or Abundance? Preserving the Past in a Digital Era*. American Historical Review 108(3), 735-762.

[25]. Schafer, R. Murray. (1973) *The music of the environment*,Universal Edition, Austria.

[26]. Shen, W. T. (2004)*The magnificent of Yun-lin county*, Booklovers Magazines, Taiwan.

[27]. Tilly, Charles.(1974) *An Urban World.* Little Borwn & Company, Boston.

[28]. Torigoe, K. (1982) *A study of the WSP.* Unpublished Master's Thesis, York University, Toronto.

[29]. Torigoe, K. (2002) *A City Traced by Soundscape*. In H. Jarviluoma & G. Wagstaff (Eds.), Soundscape Studies and. Methods (pp. 39 - 57).

[30]. Torigoe, K. (2005) *Insights Taken from Three Visited Soundscapes in Japan*, Soundscape: The Journal of Acoustic Ecology, no. 2: 9-12.

[31]. Treasure, J. (2007) *Sound Business*, Management books, United Kingdom.

[32]. Truax, B.(1984) *Acoustic communication*, Ablex Publishing Corporation: Norwood, New Jersey.

[33]. Tsai, W. Y. (2011) *The Truthfulness and Imagination of Listening: A Study on City Soundscape Image of Love River in Kaohsiung City*, Graduate School of Computational Design, National Yunlin University of Science & Technology, Yunlin.

[34]. Wang, C. S. (2001) *Soundscape's expression in the two-city case: Imagination of environmental sociology*, Journal of Building and Planning, National Taiwan University, Taiwan.

[35]. Wang, X.G. & Inaba, M. (2011) *Structure and Evolution of Digital Humanities: Empirical Research Based on. Correspondence and Co-word Analyses*, National Taiwan University Press, Taipei.

[36]. Westerkamp, H. (1991) *The WSP: Update on the Project.* The Soundscape Newsletter (No. 1), 3-4. Yang, Y. Z. (2001) *Story of Taiwan Can Sugar.* Fruition, Taipei.

[38]. Zheng, H. H. (2011) *The Heard & The Unheard-Soundscape Taiwan*. Taipei Fine Arts Museum, Taipei.