

Examining the explanatory model of the cultural continuity of an archaeological site in Taiwan

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Introduction

In this paper, I will focus on a debate about whether separate cultural layers in Kiwulan (KWL) site in Northern Taiwan belong to the same prehistoric ethnic group. The KWL site is located at Ilan city and near a riverside at northern margin of the Ilan plain in Northeastern Taiwan. The site was excavated during 2001 to 2003 by the Department of Anthropology of National Taiwan University (Chen 2007). According to archaeological remains, the site can be divided into a lower culture layer and an upper culture layer, dating from 1300B.P. to 800B.P. and 600B.P. to 100B.P. respectively based on radiocarbon dates. However, there is a debate about whether the archaeological remains from both layers belong to the same culture or not, because the archaeological remains show both similar and different patterns. Chen argued that these two layers belong to the same culture based on similar pattern of artifacts (Chen 2004). However, Chiu (2004) stated that they belong to different culture or ethnic group due to distinct styles of mortuary practice. The difference of these explanations shows distinct explanatory models in terms of archaeological evidence. For the following sections, I will examine these two explanations based on archaeological evidence, explore the philosophical theories behinds them, discuss their strength and weakness, and then conclude that Chen's argument might be more appropriate in this case. However, both explanations still need clear theoretical framework, and the combination of these two models might be a better solution to this debate.

Archaeological evidence

The excavation of Kiwulan site covered an area of 2,800 sqm and revealed hundreds of thousands of artifacts from a total of 262 archaeological excavation areas. The following is the archaeological evidence found in these layers respectively.

1. Lower culture layer (1300-800 B.P.)

The archaeological evidence include a wide variety of pottery, post holes, slabs which are associated with households, 35 burials, few iron knives and artifacts, grinding stones, slabs, imported ornaments such as glass beads, agate beads, metal bracelet, glass earrings, fauna remains such as deer and pigs. There is no much evidence relates to practices of agriculture. In addition, hunting and gathering are believed as the main subsistence in this period. For the potteries, there are different kinds of shape and form, including bowls, vessels, and pots. The most common type of pottery is the pottery with stamped geometric decoration. Although there are many types of pottery in living area, only geometric decoration pottery and plain vessels found in burials as burial goods. In addition to pottery, imported ornaments are often used as burial goods. For burials, secondary burial is the most common type, and slabs were used to serve as funerary utensils. The people abandoned this settlement around 800B.P due to environmental changes (Chen 2007).

2. Upper culture layer (600-100 B.P.)

The archaeological remains found in this period were more than lower culture layer. The archaeological evidence includes pottery, imported ceramics and stonewares, wooden artifacts such as table wares and

tools, grinding stones, metal artifacts such as knives and points, imported ornaments such as glass beads, agates beads, and metal bracelets, pipes which made of stone, clay, and metal, local ornaments made of animal bones, shells, and wood, and fauna assemblage. In addition to artifacts, 90 burials and wooden pole structures were also excavated. These wooden poles were found aligned in a north-south direction with construction marks, which were interpreted as remains of house structures. The distribution of features shows that the cemetery is located at the north part of house structures, which indicates the settlement was organized in some order. According to historical records, this settlement was believed as the biggest settlement in the 17th century. The potteries were usually decorated with geometric design, which is similar to the pottery in earlier period. For burials, the common funerary utensils were wooden boards. In addition to imported ornaments, imported ceramics were also the common burials goods (Chen 2007).

Links between evidence and behavior

Chen (2004, 2007) focused on similar archaeological remains in both layers. He pointed out the similarity of burial goods, such as local pottery, glass beads, and agate beads. Although forms and shapes of beads are not completely the same in both layers, he argued that the distribution or pattern of burial goods is similar. Agate beads and glass beads usually served as necklaces on deceased, and some small beads reveal that they were part of the decoration of clothes. In addition to beads, pottery is the common burial good in both layers. He states that the people from these two periods have similar mortuary practice based on the distribution of burial goods, especially for pottery and glass beads. Moreover, the pattern of pottery in both layers shows the similar surface treatment, stamped geometric decoration, which also indicates the same system of decoration and technique for making pots. For house structures, both periods were found post holes and wooden poles, which indicates they might have similar household form and structure. Chen (2004) linked the archaeological evidence with human behaviors at household level, and viewed these human behaviors as an entity, which reflects settlement level. He stated that the similarity of artifacts of two cultural layers indicates the cultural transmission in a singular culture, in which cultural elements transmits from people to people, and from generation to generation.

On the other hand, Chiu (2004) stresses the difference between these two layers mainly based on mortuary practice. The common burial in lower cultural layer is secondary burials and the people usually used slabs as funeral utensils; however, most burials in upper culture layer are primary with bodies in flexed position. Moreover, wood is the common funeral utensil in upper culture layer rather than slabs. Although people from both layers used beads as burial goods, forms and shapes shows slightly difference. For example, the lower culture layer was found glass earrings, which is absent in upper culture layer. Based on Person (1999) arguments, he stated that mortuary practices are social and political behaviors. Mortuary practices and associated burial goods are not only artifacts, but also rules and custom related to the core element of a culture (Pearson 1999). Besides, he believed that mortuary practice usually links to rituals, worldviews, and the view of life and death of an ethnic group. These viewpoints for mortuary practice of an ethnic group seldom change and will pass down from generation to generation unless they face significant influence. Therefore, he stated that the people from two layers belong to different cultures, because their mortuary practices are different, and there is no relevant evidence shows any factor that will affect the culture change if they are the same ethnic group. Regarding the similar burials goods found from both layers, he argued that the burial goods such as glass beads were imported materials, which indicates the common interaction between Northern Taiwan and Southeast China in the prehistoric period rather than the preference of a culture (Chiu 2004).

Discussion

1. Context of the explanatory mode

The same culture hypothesis is based on the similar human practice on the daily life, such as making pattern, living, and mortuary practices. This viewpoint stresses that we should examine the artifacts as a whole. Chen stated that if we focus on singular artifact, we might think these remains belong to different groups. But when examining all of the archaeological remains together, both layers indicate similar pattern of artifacts and shows some continuity of cultural elements. I think this argument is based on the inference to the best explanation (Lipton 2004). In addition, Chen focuses on culture elements of these two layers, which indicates there is a culture transmission from generation to generation. This assumption to some extent is based on the culture transmission theory, which stresses the inheritance of cultural elements to explain human variations (Shennan 2008). The cultural transmission theory can be viewed as unification, which assumes we can use few core patterns to describe a wide range of phenomenon. In his case, the inheritance of cultural elements is the common pattern we can find in most societies, and it serves as an explanation to interpret the similarity of two culture layers.

On the other hand, different culture hypothesis assumes that mortuary practice reflects the view of life and death of an ethnic group, which is the core element of a culture and seldom changes with time. Chiu argued that although the style of potteries or households show the similar pattern in both layers, these cultural elements tend to be influenced by other culture through frequent interactions. I think Chiu's (2004) argument is based on the D-N model (Hempel 1962). His statement is that the ritual is the core cultural element of any human culture and seldom changes with time unless they face significant influence. Second statement is that every ethnic group has their distinct ritual, and the mortuary practice reflects a kind of ritual. Because there is no evidence shows any factor that affects the change in mortuary practice if these two periods belongs to the same culture, he inferred that the people from two layers belong to different groups. In addition, his argument is also associated with unification (Kitcher 1981).

2. Explanatory model and relevant philosophy of science literatures

Inference to the best explanation and unification can be identified in Chen's argument. Lipton (2004) proposed the model of inference to the best explanation (IBE) and thought the best explanation is to infer from the available evidence to the hypothesis which can explain the evidence well. There are three steps when we make such explanation, including identifying the explanatory virtues, matching inferential virtues, and evaluating the match between loveliness and judgments. (Lipton 2004) He then proposed that a good explanation requires a cause, which can explain both the fact and the other possible phenomenon. IBE was supported by Fogelin (2007), who further provided some guidelines for a best explanation, and argued that such explanation has been used in archaeology for a long time and can be seen in both processual and post-processual archaeology (Fogelin 2007). Fogelin suggested that explanation should explain a greater quantity and diversity of empirical evidence. In addition, IBE needs to contain other traits, including generality, modesty, refutability, conservatism, and simplicity. However, Salmon (2001) criticized that Lipton's IBE model does not provide a normative basis for judging inference. In addition, it is hard to determine which is the best explanation due to many different pieces of evidence of real case, especially for archaeology (W. C. Salmon 2001).

Another model of explanation can be identified from Chen's and Chiu's arguments is unification, which means that one pattern of argument provided by a theory can be used in the derivation of a large number of sentences (Kitcher 1981). Kitcher (1981) proposed the concept of "general argument pattern" to express the structure of the derivations of the same scientific theory. He thought that all patterns may share a common core pattern, which is what we need for explanation. Arguments usually have similar logical structure, in which non-logical vocabulary could be replaced. Moreover, explanation should be the set of arguments which best unifies a given phenomenon (Kitcher 1981). However, based on Wylie's (1996) classification, there are three categories of philosophical theories about explanation:

epistemic theories, ontic theories, and pragmatic theories. She pointed out the question of simplification of unification and stated that the power of unification in Kitcher's account depends on the understanding of mechanisms and constitution of explanation of causality (Wylie 1996). Therefore, it is necessary to consider an ontic explanation, that is, causal explanation or mechanisms rather than just unification.

Deductive-Nomological model (D-N model) is another approach to scientific explanation, which can be found in Chiu's statement. D-N model relies on the logic connection and hypothesis building. In the D-N model, the explanation is divided into two sections, one is explanans, which includes the premises or statements, and another one is explanandum, which is the logical consequence of the explanans (Hempel 1962). For example, "all birds can fly" is an explanans or premise, and "eagle is a kind of birds" is another statement. Then we can derive the result that eagles can fly, which is the logical consequence of the explanans. However, Salmon (1982) pointed out that this inferential conception is based on inductive arguments that conclude highly probable in relation to the explanatory facts, which means only high probable results could be viewed as suitable explanatory conditions. That is, D-N model overlooks the improbable events, which should be also explained (W. Salmon 1982). By identifying the main arguments from different explanations of Chen and Chiu, we can understand how were these explanations given by archaeologists and are able to evaluate their arguments.

3. Critique

I think both arguments need clear theoretical frameworks to support their inferences. Although Chen's argument can explain most archaeological remains from the site, there is no explanation for the connection between the lower culture layer and upper culture layer. As Salmon (2001) said, there is no normative basis for judging inference. For example, what kind of cultural element can represent an ethnic group, and why these elements can be transmitted from generation to generation, or from person to person without change? In other words, it is necessary to further examine the mechanism of cultural transmission from lower culture layer to upper culture layer. On the other hand, Chiu's argument provides the mechanism behinds the mortuary practice and culture change, which connects the archaeological evidence with the concept of ethnicity. However, his explanation only relies on the mortuary practice, which overlooked other possible phenomenon that can provide clues for the culture continuity. How can we interpret the culture continuity only based on mortuary practice is the question and it needs strong theoretical framework and model testing to support it. Therefore, I think Chiu's argument should also consider other evidence in order to give a better explanation. Both arguments show their strengths and flaws, and I proposed that the combination of these two explanatory models might provide a better explanation.

Conclusion

The culture continuity of the Kiwulan site is an important topic in Taiwan, because if two culture layers belong to the same ethnic group, then the site can provide a good source to research the long term change of a culture. Chen's model, which assumes that we can view these two layers as a same culture, provides an appropriate explanation based on most archaeological evidence and the similar cultural elements. However, his explanation lacks of the explanation of mechanism for the culture transmission. On the other hand, although Chiu's argument only focuses on the mortuary practice, he examines the evidence in a fine-grained way, which provides mechanism for understanding the process.

I think the combination of these two approaches can provide a better explanation for the culture continuity by applying Glennan's causal mechanism (Glennan 2010). We can examine the relationship of each type of archaeological evidence and associated human behavior in a fine-grained way by scientific methods, such as DNA analysis for human remains, or technical choice in pottery productions. In a course-grained way, we can explore the mechanisms of culture change in a ethnic group based on the general pattern identified by archaeologists from other places and then formulate a model to test the archaeological evidence from Kiwulan site. Based on Glennan's causal mechanism approach, we can

combine Chen's culture transmission theory and Chiu's hypothesis testing in order to obtain a better understanding of the culture continuity of the Kiwulan site.

Reference

- Chen, Yu-Pei. 2004. "The Significance of the Kiwulan Site for Understanding the Prehistoric Period in I-lan Plain." *Ilan Study*, 1–14.
- . 2007. *The Excavation Report of the Ki-Wu-Lan Site 1*. I-lan, Taiwan: Lanyang museum.
- Chiu, Hung-Lin. 2004. "Investigations of Mortuary Behaviors and Cultural Change of the Kivulan Site in I-Lan County, Taiwan." Dissertation, Taipei: Department of Anthropology, National Taiwan University.
- Fogelin, Lars. 2007. "Inference to the Best Explanation: A Common and Effective Form of Archaeological Reasoning." *American Antiquity* Vol. 72 (No. 4): pp. 603–25.
- Glennan, S. 2010. "Ephemeral Mechanisms and Historical Explanation." *Erkenntnis* 72 (2): 251–66.
- Hempel, Carl G. 1962. "Two Basic Types of Scientific Explanation." *Philosophy of Science: The Central Issues*, 685–94.
- Kitcher, Philip. 1981. "Explanatory Unification." *Philosophy of Science*, 507–31.
- Lipton, Peter. 2004. "Inference to the Best Explanation." In *A Companion to the Philosophy of Science*, edited by W.H. Newton-Smith, 184–93. New York: Routledge.
- Pearson, Mike P. 1999. *The Archaeology of Death and Burial*. UK: Sutton: Phoenix Mill.
- Salmon, W.C. 1982. "Causality in Archaeological Explanation." In *Theory and Explanation in Archaeology*, edited by M. Rowlands C. Renfrew and B. Seagraves, 45–55. Academic Press.
- Salmon, Wesley C. 2001. "Reflections of a Bashful Bayesian: A Reply to Peter Lipton." In *Explanation*. *Springer Netherlands*, 121–36.
- Shennan, Stephen. 2008. "Evolution in Archaeology." *Annual Review of Anthropology* 37: 75–91.
- Wylie, Alison. 1996. "Unification and Convergence in Archaeological Explanation: The Agricultural 'Wave of Advance' and the Origins of Indo-European Languages." *The Southern Journal of Philosophy* 34 (S1): 1–30.