

3D DIGITAL ARCHIVING OF AINU HOUSES

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BACKGROUND

Collecting and sharing 3D digital data has become increasingly accessible in recent years due to the rapid development of technology. This project is an ongoing three-year work aiming to collect and archive 3D digital data of architecture and urban space to create architectural education materials. The first year concentrated on archiving Ainu houses, called *chise* in Ainu language, in Asahikawa and Biratori, Hokkaido. During data collection, the group has interviewed individuals and organizations engaged in preserving Ainu culture and discussed how to effectively utilize the 3D digital archive for education, tourism, and cultural preservation.

OBJECTIVE

There are no existing *chise* that people inhabit, and those that still exist are mainly built inside museums for touristic and educational purposes, thus very small in number. In the past few decades, the number of Ainu with special building techniques of *chise* has decreased rapidly.¹ For example, in Kamikawa, it is said that there is only one Ainu left who knows how to build the Kamikawa style *chise*.² There is an urgent need to record the building method to pass on to the next generations. At the same time, with the opening of the National Ainu Museum “Upopoy” in 2019, there is an increasing demand to learn about the Ainu culture.

METHODOLOGY AND RESULTS



Fig.1 3D models of chise and related buildings

Since *chise* uses non-engineered natural materials, which come in various forms and textures, photogrammetry and 3D photography were chosen to record the buildings accurately and efficiently. For photogrammetry, Sony alpha7R III camera and GoPro Hero9 cameras were used to take photos and to be processed into 3D models with Agisoft Metashape. Drones were not used because of strict regulations inside city centers; instead, 7.5m tall monopods were used. For 3D photography, Matterport Pro2 camera was used with the Matterport platform for both 3D and 2D visual results as well as Ricoh THETA SC2.

CONCLUSION

The texture-rich Ainu houses were made into well-depicted 3D models. The effective use of these models is still yet to be explored, but our informants, mainly from Ainu-related museums, all showed interest in using new technology. However, some showed concern that people would not be able to feel nature with five senses, which is central to Ainu culture. The Ainu houses are all called *chise* throughout different regions, but construction methods and building materials differ from place to place. In Upopoy, only the Shiraoi local-style *chise* is being displayed and not of others. It is costly and challenging to build the actual structure, but with the use of VR, these 3D models could be shown virtually and could help to understand the architectural features of the Ainu houses in different regions.

NOTES

1. Kobayashi, Koji, Reconsideration on Architectural Culture of the Ainu, Sapporo, Hokkaido Shuppan Kikaku Center, 2010 (In Japanese)
2. The information was revealed through our informant from the Peniunkur NPO.

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