Sustainable Design Method Focusing on Latent Function

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In the pursuit of an affluent lifestyle, man has made numerous artifacts. However, design based on mass production and mass consumption causes the drying up of resources and environmental pollution. We should work on the formation of a sustainable society if we wish to continue using the limited natural resources. Various kinds of research are being carried out on environmental design and environmental evaluation of an artifact, and the situation has improved gradually. However, many of these techniques are top-down methods. Sustainable artifact of user's aspect is not so discussed. A top-down method can efficiently form sustainable society. However, a top-down method has the possibility of limiting the person's behavior. Therefore, a top-down method has danger of declining a free, creative activity. The limitation of person's behavior should be made a minimum. We focus attention to Latent Function as artifact of the user aspect. When an entity is exposed to a circumstance, a peculiar behavior is manifested corresponding to that circumstance. This behavior is called the Visible Function. Different behaviors are observed in different circumstances. The total of these behaviors is called the Latent Function. If the number of artifacts with abundant Latent Functions increases in society, the user can continuously discover new functions. This is expected to lead to the decrease of wasteful action and the improvement of recycling. In the previous work, the evaluation approach from the viewpoint of Latent Function is proposed. However, the features of artifact from which Latent Function can be discovered easily have not been clarified.

Moreover, the design methodology of artifact including Latent Function is not

constructed. The purpose of this research analyzes the artifact from the viewpoint of the Latent Function. And, the feature of the artifact with abundant Latent Function is clarified. And, we undertake the construction of a method of designing artifacts with the Latent Function.

In this study, the relationship between Latent Functions discovered from the artifact and that component is focused on. (In this paper, the artifact expresses a table and chest of drawers etc. Moreover, the component expresses wood and the glass that compose the table and chest of drawers etc.) Generally, it is thought that the Latent Function is discovered easily from the component than an artifact. However, if it is an artifact including the same component, the Latent Function discovered from the components may be discoverable from the artifact including that component. Namely, the author thinks that a present artifact has the obstruction factor that Latent Function cannot be discovered by paying attention to component. The author is expecting that the Latent Function can be easily discovered from the artifact if this obstruction factor is removed. In this research, the questionnaire survey is done that discovers many Latent Functions from two problems of the relation between the artifact and the component. And, the Latent Function discovered from both is quantified by the concept dictionary. The Latent Function discovered from both is clarified whether the Latent Function has been discovered based on a certain standard by the discrimination analysis. The reason why the Latent Function discovered from the component cannot be discovered from the artifact including the component is heard by the semi-structured interview. As a result, the obstruction factor is clarified. And, the author proposes the design support system that considers use by actual design development based on the experiment result.

In the result, it has been understood that the user cannot easily discover Latent Function from the artifact compared with the component. When the user discovers the Latent Function from the artifact, the Visible Function is considered according to the shape of the artifact. At this time, the user was restricted by the Visible Function to image, and the range to think about the Latent Function was expected to be narrowed. However, it has been understood that the kind of the Latent Function discovered from the artifact and the component might tend to look like by discrimination analysis. Therefore, the possibility that the Latent Function of the component degree was able to be discovered from the artifact was suggested by removing the obstruction factor.