Approach to visual impression of pedestrian to enhance quality of walking street in compact city: Characteristics of urban waterways in Matsue, Japan

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【Purpose and content of research】
Background and purpose:

The interest in waterways and urban connectivity is becoming the primary theme of city development strategies. Studies of compact city revitalization tend to focus on how to raise the interest and awareness of inhabitants of local characteristics. In the case of Matsue, water features represent a particular topic. Looking at the photo collection in the book Matsue by master photographer Shoji Ueda, it is evident that more than half of the photos compose of the scenery of daily life and a small frame of a townscape by the water. Water features are typically included in visual stimuli representing natural surroundings, whereas they also appear in those towns and cities. Despite being named the City of Water and famous for its charming water scenery near various landmarks, Matsue's diverse waterways are often ignored by its inhabitants as lacking identity and attractiveness. Therefore, this paper aims to clarify the visual impression of urban waterways and their connection with Matsue City. The results reveal the different characteristics of urban waterways in Matsue and their driven visual impressions from the viewpoint of its inhabitants.

Research methodology:

The research focuses on the parts of waterways that connect the moat around Matsue Castle to the Ohashi River since it connects to various pedestrian streets around Matsue City. Data collection used a combined method of mapping, photography, and questionnaire. Firstly, the researcher visits all the accessible streets to the waterways and collects the varieties of physical elements such as trees, buildings, bridges, streets etc., and their positions. These data are classified as spatial components of urban waterways. Secondly, 146 photographs were taken at these positions. By classifying the physical elements into different categories such as townscape, waterscape, vegetation or sky, the analysis determines the proportion of each category to define the pattern of visual representation of waterways. There are three patterns of visual proportion: with no dominant element, with one dominant element and with two dominant elements. Thirdly, using these 3 patterns of visual proportion, a questionnaire was conducted. The respondents are asked to choose their preferred pattern of visual proportion among 36 sets of photos and the reason for their choice. 31 respondents were recruited for the questionnaires, presenting various age ranges and both genders. Also, all of them are either living in Matsue or are familiar with these urban waterways.

【**Research achievement** (**acquired knowledge, results, research papers, conference presentations, potential applications for external research grants through this research project**)】

The outcome of the research reveals three results. Firstly, it is possible to determine the patterns of Matsue waterways scenery, which have a complex characteristic in terms of visual proportion, linked to the specific location recorded on the map. Secondly, concerning the visual impression, most respondents find more than one reason for their preferred photo with a visual proportion of no dominant element. It could be interpreted that photos with a balanced proportion of physical elements evoke more impressions than the ones with one or two dominants. Finally, in terms of reasons for preference photos, most people justify their choice by finding some appealing elements in the photos or finding a nice composition within the view frame. This finding confirms the charming characteristics of Matsue urban waterways, that did not only locate near a famous landmark but are well distributed in several locations. This finding could be used for raising awareness of the the attractiveness of Matsue urban waterways, as most of the respondents discover through the questionnaire the diversity of these sceneries and find the experience constructive.

This time, the experiment only used a 2D map of Matsue City. However, in future experiments, we are planning to build an interactive model of urban waterways in Matsue. Such a model will allow us to use virtual reality aims to help experiment participants experience freely walking around the VR city as if they were visiting the city for sightseeing. The outcome of the research will be reaching a larger audience and contribute to the revitalization of this compact city.

The research is currently prepared to be participating to the World Sustainable Built Environment Conference Wsbe24 organized in Montreal, Canada.