

## Typological Analysis and Comparative Study of Traditional Dwellings by "World Dwellings Relational Schema Database"

"World Dwellings Relational Schema Database"  
を用いた伝統的住居の類型化と比較手法に関する研究

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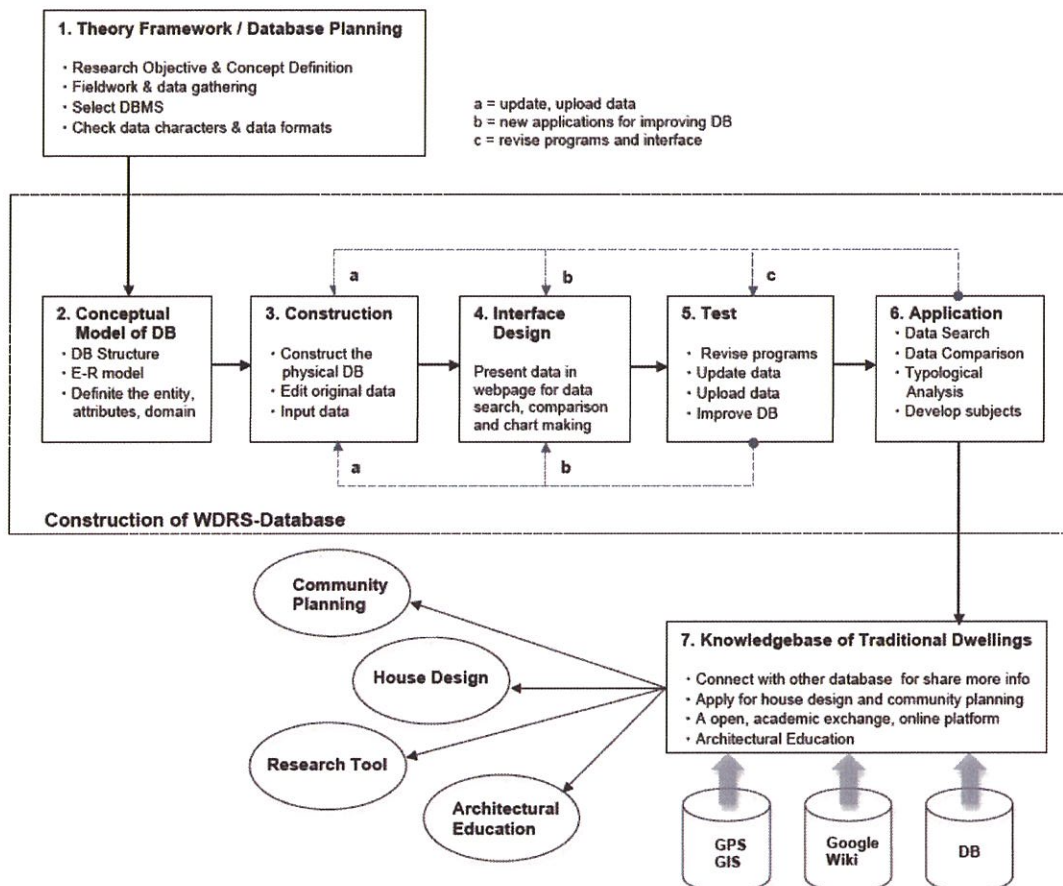
### Abstract:

This study is an attempt to develop a general and yet explicit description of traditional dwellings with typological analysis. This would be followed by the comparison of different house cases or house sets to derive a fruitful of information, which is explicit and understandable. With further analysis, this generates a number of meaningful topics and subjects for further research.

Typological analysis emphasizes on the study of differences and similarities among various house types worldwide. The comparison of different house cases can be either micro-transformation among the same house type or difference among different house types. The constitutional factors and elements of traditional settlements and houses are extremely complicated; therefore categorization or analysis of merely spatial form or superficial feature is impossible. Comprehensive and general information such as descriptive attributes including environmental context, cultural background, and spatial form is mandatory for a complete description of a house type.

This study endeavors to adopt **32 "general attributes"** to describe all collected house cases. Data types, formats and characteristics of these attributes are complicated and often the result of a multi-layer composition. Instead of parallel structures, the relationships among attributes differ according to house cases and presents different levels and corresponding relationship. **World Dwellings Relational Schema Database (WDRS-Database)** is established in this study as an analytical tool. In addition to basic functionalities of general database such as data storage, browse, download, and search, it is also equipped with advanced functionalities such as **attributive values comparison, similar ratio calculation, and analytical chart making**. The similarity among house cases can be roughly known by similar ratio calculation and similar

ratio ranking (related house set list), and the comparison of attributive values provides reasonable explanation of these differences (data comparison table). Therefore, WDRS-Database not only acts as a database system that describes traditional dwellings but also a mechanism that develops the subject of house study (figure 1).



(figure 1) Research Process

WDRS-Database provides three ways of comparing data: **1) case setting 2) similar ratio setting 3) attributive values setting** (figure 2). Users can develop interesting and potential new topics according to their research objectives and requirements, and furthermore adjust the weighting of each attribute and recalculate similar ratio by using **ON/OFF Button** or **Ranger Bar**. With substantial amount of comparison results on house data, unique hierarchy (vertical relation) and causal relationship (horizontal relation) of the attributes, **key attribute (key spatial manipulation)** and **pair attributes** can be figured out. The values of general attributes serve to define and describe house types effectively and is able to project the correlation and similarity among different house cases in a region or a cultural circle by comparison of key spatial manipulation and similar ratio.

The long-term goal of WDRS-Database is to provide an open platform with free access to uploading, downloading, editing and sharing data in the future. It will reach the ultimate aim and value of village survey and house study by recording, saving, and implementing the construction knowledgebase of traditional dwellings in the design of future vernacular architecture, modern house and community planning.

**Keywords:**

*Traditional Dwellings, Relational Schema Database System, Typological Analysis, Similar Ratio Calculation, Key Spatial Manipulation, Pair Attributes.*

**Composition of Dissertation:**

**Chapter 1. INTRODUCTION**

- 1.1 First Village Survey in China
- 1.2 Subjects of Traditional Dwellings' Study

**Chapter 2. BACKGROUND**

- 2.1 Motivation
- 2.2 Previous Researches
- 2.3 Objective

**Chapter 3. CONCEPT & METHOD**

- 3.1 Research Process
- 3.2 Characters of Traditional Dwellings
- 3.3 General Attributes for Describing Traditional Dwellings
- 3.4 Framework of Data Comparison (*Concept / Method and Meaning / Expression and Browse*)

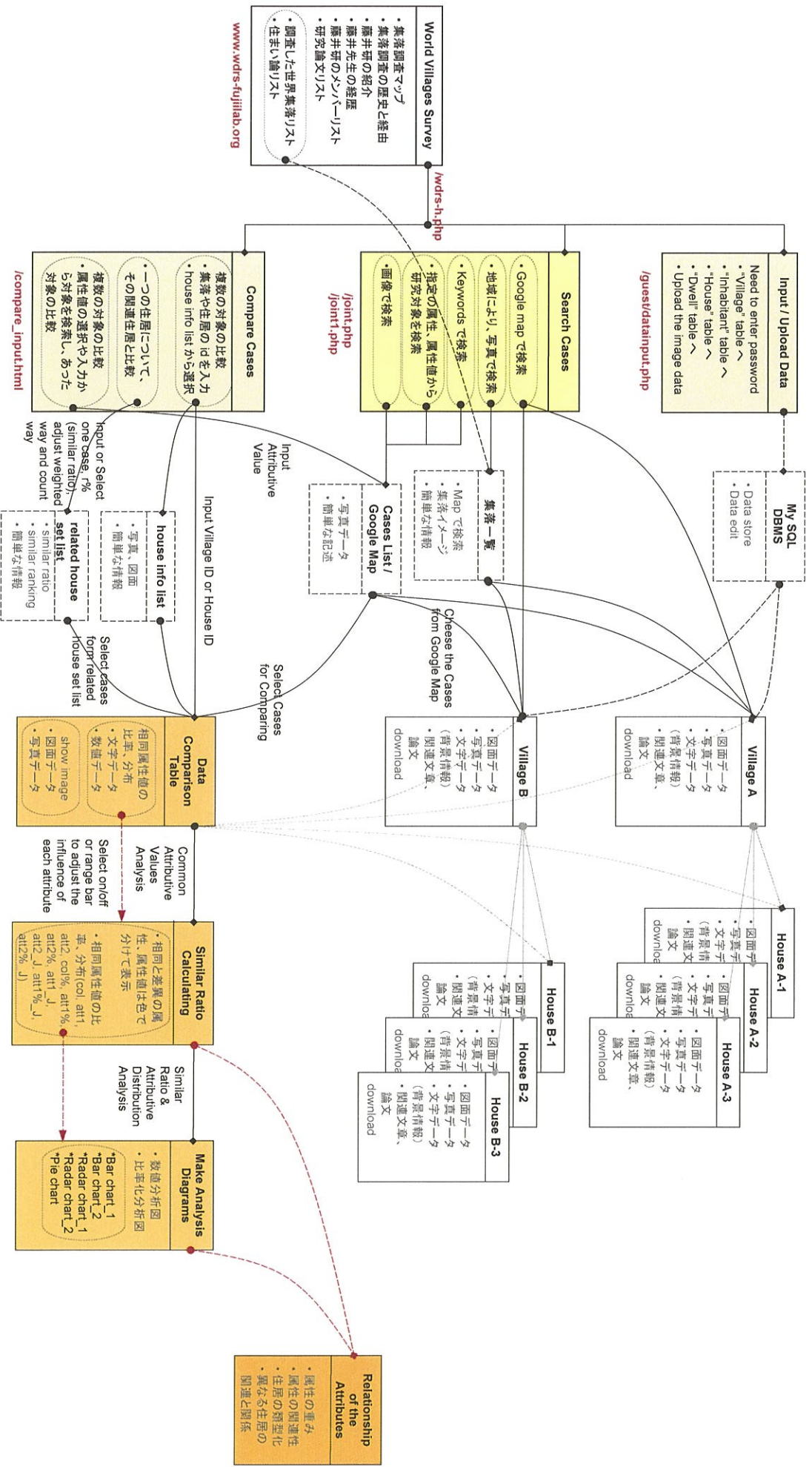
**Chapter 4. RESEARCH TOOL**

- 4.1 Relational Schema Database System
- 4.2 Framework of WDRS-Database
- 4.3 Application (*Site Map of the WDRS-Database/ Data Input / Data Search / Data Comparison*)

**Chapter 5. DEMONSTRATION**

- \*Comparative Study of Toba House and Related Houses in Indonesian Region  
(*One to One / One to Many / Many to Many*)
- \*Comparative Study of Austronesian Houses in Indonesian Region  
(*Natural Factors and Dwelling Forms / Cultural Factors and Dwelling Forms*)
- \*Discovery and Supposition

**Chapter 6. CONCLUSION**



(figure 2) Site Map of the WDRS-Database (<http://www.wdrs-fujiilab.org>)