

HUMAN SUSTAINABILITY

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Human Scientific Factors to Enhance Life Cycle Sustainability of Housings

MAIN TASK

Defining ways of enhancing the life cycle sustainability of housings by considering the human quality factors.

Research Report Part I: Housing Theory and Science

MAIN THESIS

Humane building leads sustainable building.
Without humanity there is no social, but also no economic, nor ecological sustainability possible.

Initial causal connection

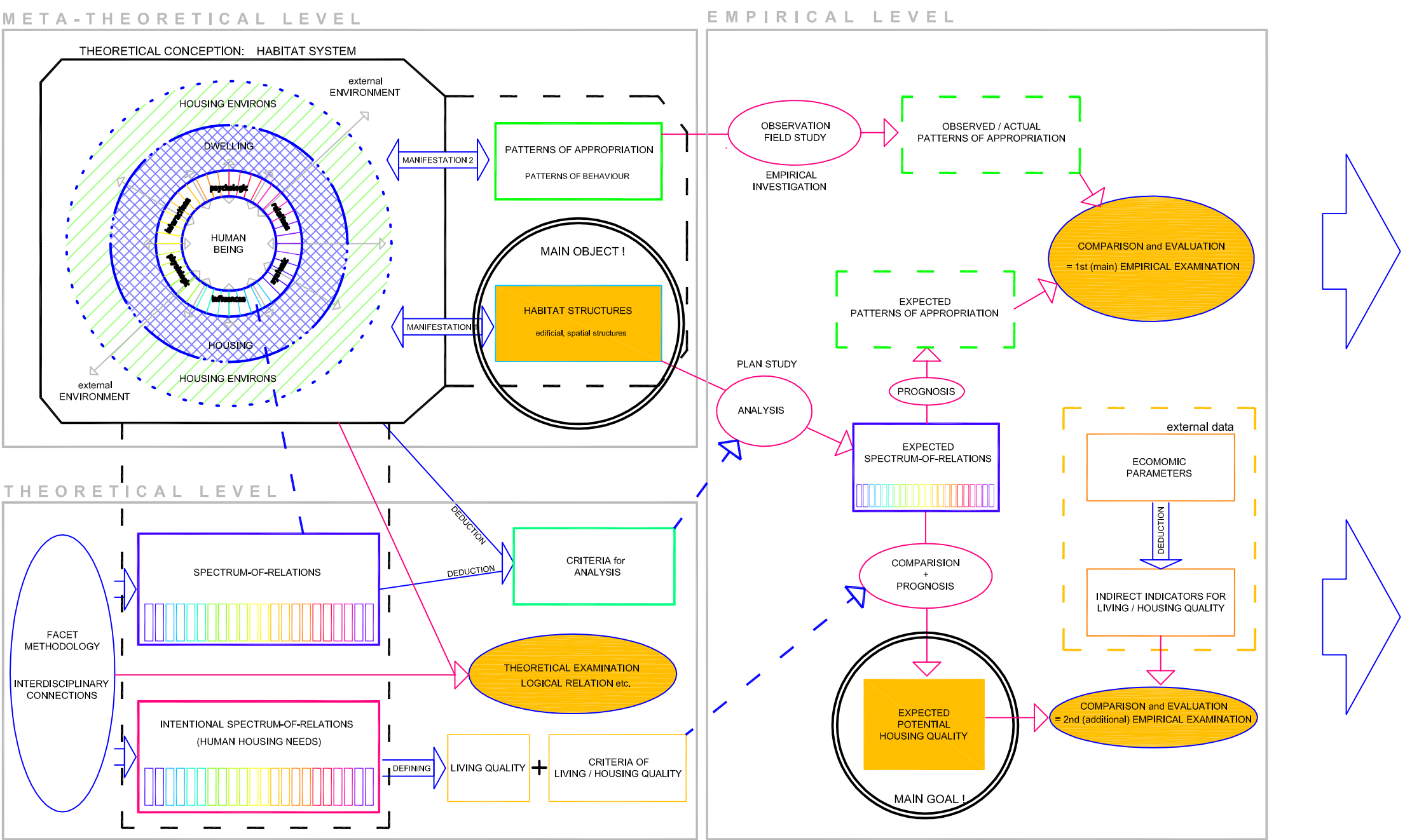
The higher the human quality of residential buildings the longer and more intensively they will be occupied on average.

The longer the period of occupation, which means the longer the period between constructing and reconstructing or demolishing the higher generally the impact on life cycle sustainability.

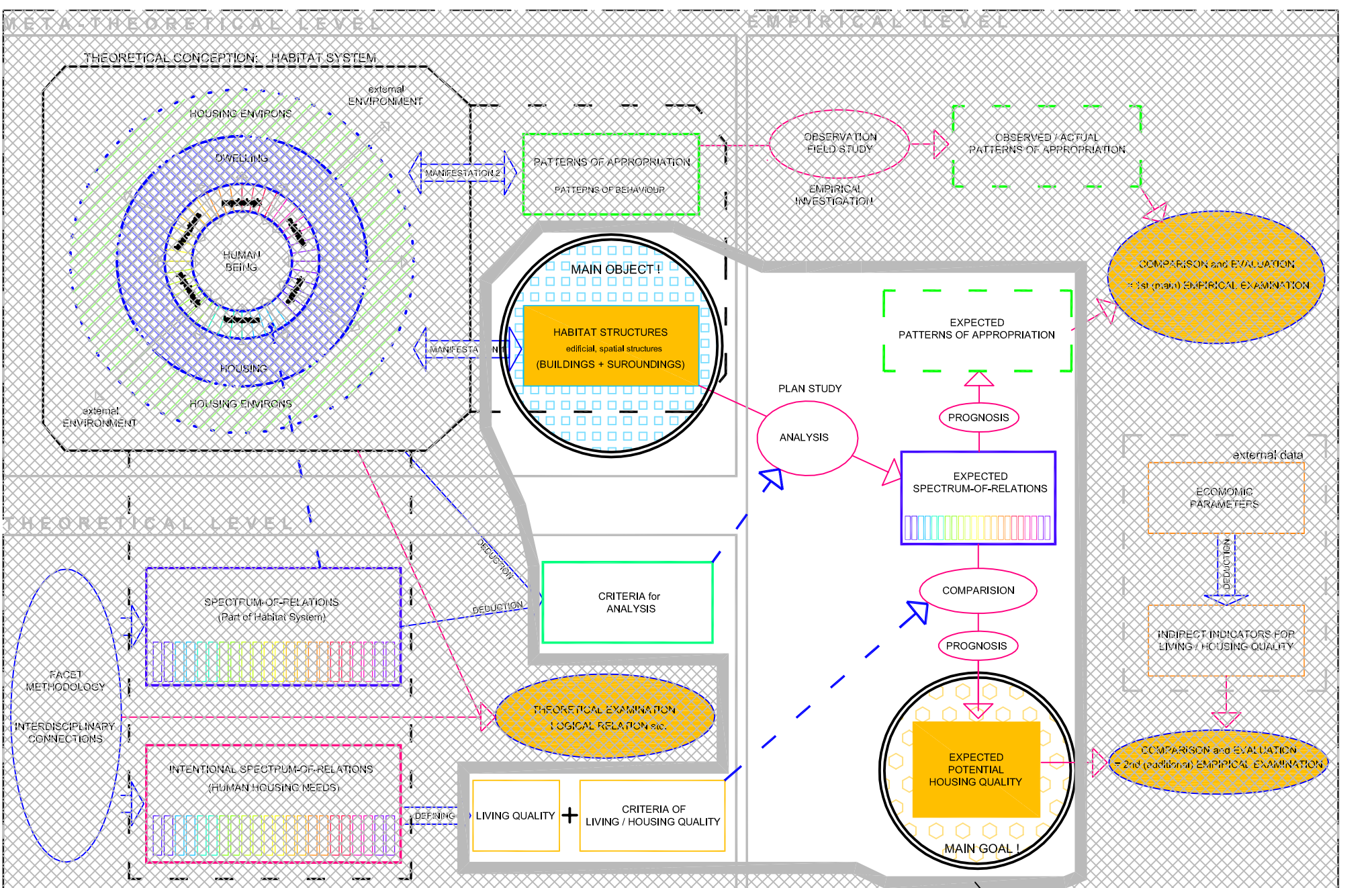
The main challange of this conclusion reveals by trying to catch the central terms:

How can "HUMAN HOUSING QUALITY" be defined, analysed, and optimized - especially in advance, before erecting the building?

Scheme A Methodology Overview



Scheme A-1 Practical Use Overview



HQA
Housing-Quality-Analysis

The research has been carried out on 3 main levels. (**Scheme A**)

(1) Meta-theoretical Level (Scientific Theoretical Work)
Theoretical fundamentals - a theory of human habitat systems - had been conceived by a detailed definition of:
- the habitat system and its primary components
- the relations and exchange processes, which are determining the system
- the interconnections between habitat system and the edificial, spatial structures (habitat structures) which are representing the physical manifestation of a habitat system
- the interconnections between habitat system and patterns of use (patterns-of-appropriation) which are representing the behavioural manifestation of a habitat system.

(2) Theoretical Level

(2a) Spectrum-of-Relations and Human-Housing-Needs
The first main target: defining the relations within a habitat system, between a human being and his habitat, his living environment (the spectrum-of-relations).
The second main target: defining the most important needs that are related to the habitat and generally to "homo sapiens". The term "living/housing quality" can only be defined by the help of the human-housing-needs (the intentional spectrum-of-relations). Interdisciplinary connections have been assembled systematically. Especially human sciences like housing and environmental psychology, social and developmental psychology, housing physiology, building biology etc. provided substantial contributions to the whole spectrum.

(2b) Theoretical Examination
The theoretical conception had to comply with the following criteria: It had to be synthetic without internal contradictions, it must not be metaphysical or esoteric etc. which means that it must not defy examination, be it empirical and/or theoretical.

(3) Empirical Level

(3a) Analysing habitat structures
Step 1, Compilation of Criteria for Analysis: First the parameters for analysis have been derived from the theoretical basis (the human habitat system including the spectrum-of-relations). In this initial stage the methodology of analysis has been conceived in general. Step 2, Selection of different built housing examples.
Step 3, Analysing work: The housing objects had been investigated by analysing plans and other documents. Ggenerating two results:

the expected patterns-of-appropriation and the expected housing/living quality of the respective object.

(3b) Documenting the patterns-of-appropriation
A habitat system is manifesting itself in a behavioural sense in the form of patterns-of-appropriation - i.e. patterns of use and behaviour. Appropriation is in this context standing for establishing a relationship to one's own living environs and it also means that a physical, spatial environment becomes a personal living space (a habitat!). Appropriations can be empirically explored and described by observing actual processes (behavioural patterns) or traces and signs of use, adaptation, forming etc. i.e. patterns-of-appropriation are empirically recognizable.

(3c) Evaluation and Empirical Examination
First Empirical Examination: evaluation of the findings of analysis (3a) and field research (3b).

By comparison between the expected patterns-of-appropriation (3a, step 3) and the observed actual patterns-of-appropriation (3b) the habitat theory or respective sentences of the theory had been verified or falsified.

Second Empirical Examination: Additionally the results of analysis has been compared with several "economic" parameters like vacancies, duration of occupancy etc. Those parameters are representing indirect indicators for housing quality.

(4) Conclusions and Resume

Potential Impact on Sustainable Housing Practice (Analysing, Planning and Designing)

Comparing the schemes A and A-1: After the research works the potential practical use became clearly visible. By means of the criteria for analyses we are able to check out the potential housing/living quality of buildings and residential areas in detail and **in advance** - during the stage of planning (MAIN GOAL); and we are able to define the expected patterns-of-appropriation in advance.

How can we **enhance** the human quality of housings and settlements and therefore also their **sustainability**?
- By using this sophisticated methodology of analysis during planning.

Enhancing human sustainability: By a clear and detailed definition of the specific qualities of an object, such analyses could support avoidance of deficiencies and provide the basis for various improvements concerning the human-related aspects.

SUSTAINABILITY plus BENEFIT to inhabitants

Increasing on 3 levels

- **ECOLOGICAL sustainability:** prolonging the life-cycle endurance of buildings; reduction of dispersed settlements, urban sprawl, etc.
- **SOCIAL sustainability:** increase of human housing quality, living and social quality, etc.
- **ECONOMIC sustainability:** higher occupation rate, higher quality for equal price, etc.