

## Chapter 15

# A Diagnostic System Created for Evaluation and Maintenance of Building Constructions

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### ABSTRACT

*The successful diagnostic activity has an important role in the changes of the repair costs and the efficient elimination of the damages. The aim of the general building diagnostics is to determine the various visible or instrumentally observable alterations, to qualify the constructions from the suitability and personal safety (accidence) points of view. Our diagnostic system is primarily based on a visual examination on the spot, its method is suitable for the examination of almost all important structures and structure changes of the buildings. During the operation of the diagnostic system a large number of data—valuable for the professional practice—was collected and will be collected also in the future, the analysis of which data set is specially suitable for revaluing construction and the practical application of the experiences later during the building maintenance and reconstruction work. For using the system a so-called “morphological box” has been created, that contains the hierarchic system of constructions, which is connected with the construction components’ thesaurus appointed by the correct structure codes of these constructions’ place in the hierarchy. The thesaurus was not only necessary because of the easy surveillance of the system, but to exclude the usage of structure-name synonyms in the interest of unified handling. The analysis of which data set is specially suitable for revaluing earlier built constructions and can help to create knowledge based new constructions for the future.*

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## INTRODUCTION

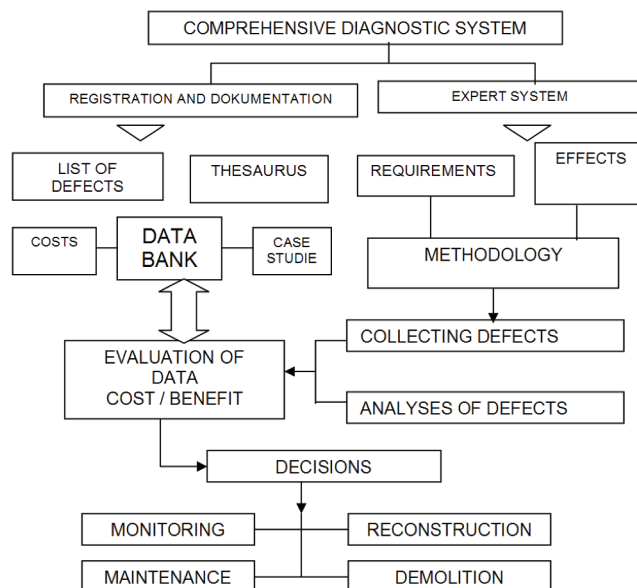
It is important, that people in architecture science give a useful guide—especially concerning questions raised by new trends of the changing, transforming building activities and construction development—to the profession practice. Seeing that in the aspect of adequacy the appearance of new constructions and building materials always raises new problems to be solved, and the experts in practice busy with the daily tasks of the profession ‘according to Möller (1945) cannot always pay enough attention to them’. The efficient diagnostic activity as it has been explained before plays a very important part in the formation of maintenance costs and elimination of damage. It has a just as important part in the preparation of a decision, as having a clear picture of the technological conditions of buildings or group of buildings can be of service at the preparation before making financial decisions of great significance.

## DIAGNOSTIC SYSTEM

A faulty diagnosis can lead to incorrect decisions causing financial loss. The research group of the Széchenyi István University (Győr) worked out such a comprehensive diagnostic system (see Figure 1) which contains a common inspection method ‘according to Molnárka (2000) for the vast majority of constructional components (for traditional and actually used constructions in Hungary), and can be used for computer data registration and analysis.

The morphological box (Zwicky 1966) is connected with the construction components’ thesaurus denoted by the correct structure codes of these constructions’ place in the hierarchy. The theory of using morphological box for data registration in the process of building diagnostic (Koppány 1977) was published in Hungary seven years ago. The “matrix” construction of our morphological box fits to the methodology of the visual examination and to the hierarchy of the common building

*Figure 1.*



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