The Use of Morphological Indicators in the Optimization of Structures

Prof. Willy P. De Wilde
Svobodná univerzita v Bruselu

Přednáška v rámci semináře katedry stavební mechaniky
ve čtvrtek 21. dubna 2005 od 14 hodin v B 169

Morphological indicators are dimensionless numbers which describe a performance characteristic of a structure in function of a purely geometrical characteristic of this structure: the slenderness or L/H ratio, in which L and H are the dimensions of the smallest rectangular window in which the structure can be framed.

Two morphological indicators were introduced by Samyn: W, being a volume indicator and thus measure of material use, and D a displacement indicator and thus measure of the stiffness.

Starting from known typologies (trusses: Warren, Howe, Pratt, ..., beams, arches) one can find (close to) optimal dimensions of the structural parts in a very early stage of the design.

The lecture will focus on three points:
    a) principles of the method,
    b) developments of the initial thesis, and
    c) on-going work at Vrije Universiteit Brussel.