

# **The Use of Morphological Indicators in the Optimization of Structures**

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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.