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STRUCTURAL MORPHOLOGY AND FREE FORM DESIGN

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RÉSUMÉ

Since several years, a new trend characterises some architectural realizations following the so-called “Bilbao effect”. “Blob”, “liquid”, “flexible” are as many qualifiers that are used to describe them. Their common character relies in very complex forms often composed of double curved surfaces (“free form design”).

It is a matter of fact that this freedom for forms during the conceptual design phase, ends in very complex situations for engineers and builders. Freedom for some designers may also put their partners in “jails of nightmares”. We try to show that in classical situations, many parameters are coupled, and mainly those associated to form and structural composition.

It is consequently necessary to understand the morphogenesis of building systems. History of architecture is marked out by archetypal forms according to different constraints: pure geometric ones, mechanically constraints governing formfinding process.

It is then useful to imagine weaving again new links between parameters which condition the form, and the other parameters of the free form design. Among others, we just introduce Pascalian forms, whose generation mode can be used all through the design process.

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- ✓ Born 1946. Civil Engineer, DI, DE, HDR. Professor, (University Montpellier 2, France).
- ✓ Fields of research : initially stressed structures (tensegrity, membranes), structural morphology, design processes
- ✓ More than 280 items in publication list. Book on “Tensegrity” (250 pages-2003), Editor of an “Anthology of Structural Morphology” under press. (World Sciences)
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- ✓ Chairman of the first, fifth and sixth international seminar on “Structural Morphology ” (Montpellier 1992 and 2004, Acapulco 2008). Chairman for IASS Symposium 2004 in Montpellier, France.