Re-engaging the Kinematics of Building Assembly: An Exploration of Konrad Wachsmann's Architecture Machine through a Technological Dialog with the L.O.M.

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ABSTRACT

Architectural building technologies have been routinely adopted from the production of consumer goods, ship building, and automotive industries. One example of an automated assembly machine created by architects for architecture is the Location Orientation Manipulator, L.O.M., developed by Architect/educator Konrad Wachsmann with his PhD students John Bollinger and Xavier Mendoza (1969-71). This visionary machine, designed to study building kinematics and architectural building assembly, anticipated today's multi-axis and gantry-based construction technologies. In this paper the L.O.M. is virtually reconstructed using Autodesk Fusion software, resulting in a comprehensive parts catalog, an inventory of technologies employed, procedures of use, motion capabilities, and machine design principles. As part of a larger research project, this focused study of the L.O.M. as case study facilitated through an Autodesk Fusion model – essentially a lost architectural building machine reconstructed – allowed the researchers to study the L.O.M.'s capabilities and limits. The reconstruction critically extending Wachsmann, Bollinger and Mendoza's machine to the present day, where it can be more accurately studied and articulated, to inform contemporary automated building technologies specific to architecture. As part of further work the team will adapt replicate and study the kinematics of the L.O.M. in relation to a contemporary gantry based Universal Building Machine, U.B.M.