

THE MUSEUM OF MODERN ART

11 WEST 53 STREET, NEW YORK 19, N. Y.

TELEPHONE: CIRCLE 5-8900

TEXT OF WALL LABEL

STRUCTURES BY BUCKMINSTER FULLER

TENSEGRITY MAST

Built by Shoji Sadao and Edison Price Inc.

The principle involved in the tension integrity mast was first discovered by Kenneth Snelson in 1949, following his studies at Black Mountain College with Buckminster Fuller. The mast in the exhibition is based on the same principle but employs a different configuration of parts.

Buildings usually are held together by their compressive strength -- their resistance to weights which tend to crush the materials of which they are made. Although most of our buildings employ steel in compression, we have all observed that steel is far stronger when used for its ability to resist a pull. (The tensile strength of steel is perhaps most familiar to us in suspension bridges, with their vast roadways hung from steel wires.) Since men began to build the compressive strength of materials has increased only very little, but tensile strength has been increased many thousands of times by the development of modern metal alloys.

Perhaps the most dramatic development to grow out of Fuller's theories is the discovery made by Kenneth Snelson, and analysed by Fuller as tension-integrity. In the octet truss one kind of structural member is used to handle both the forces of tension and compression. Tension-integrity describes a system in which tension and compression forces within the same structure are handled in different ways and with different materials.

The tensegrity mast made for this exhibition assigns compressive forces to aluminum tubes. The tubes separate thin wires of monel metal which are all in tension. The continuous pull of the wires is resisted by the isolated discontinuous tubes. The system is called tension-integrity, or tensegrity, because it uses compression discontinuously and tension continuously.

The mast as such has no practical purpose. In theory structures organized on this principle have the astonishing characteristic of becoming stronger as their size increases. Domes or other shapes built with tensegrity elements could theoretically be of unlimited dimensions. The mastery of universal forces tensegrity implies is meaningful, however, not simply because it will enable us to make larger structures. More important, and perhaps central to Fuller's genius, is the insight his ideas give us into universal order. That is an achievement which ranks him with other great poets, scientists, and artists.