

SPACE ACTIVITY AND SOCIETY (E5)

The Architecture of Space: New Frontiers of 21st Century Space Architecture and Entrepreneurship for a New Generation of Explorers. (3)

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LUNAR DANCE POTENTIAL

Abstract

Dance in microgravity has been explored and simulated underwater and in parabolic flight. Dance in lunar gravity has had relatively little attention, probably because it is regarded as too far in the future to merit serious study now. Yet this is a good time to consider dance, along with other arts, as necessary elements of life in lunar habitats. People now alive may be the ones to design lunar architectures and creatively exploit the unique artistic possibilities of lunar living.

Dancers' dynamics differ qualitatively in micro and partial gravity, because in the latter it is possible to exploit traction to achieve substantial horizontal momentum exchange with a floor, as well as the vertical momentum component that enables high leaps and acrobatics. What an imaginative choreographer and dance company can do with this prospect is unknown. The purpose of this paper is to stimulate thought and to show, by means of a simple physical demonstration, the appearance of a dance leap in one-sixth gravity.

The demonstration is done with a Barbie ballerina traveling with ball-bearing aircraft pulleys on a black thread before a dark background. With the thread nearly vertical, she is given a calibrated impulse for a typical leap to about one-third of body height. Then, with the thread tilted down to about ten degrees from the horizontal, the same impulse causes a leap to about twice body height with six times the duration.