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TADLOCK, MARVIN LANE. Wind and Water Work. (1972)
Directed by: Mr. Gilbert Carpenter. Pp. 4.

Four pieces of kinetic sculpture demonstrate various levels of programming as two use wind as a kinetic force and the other two use water.

This thesis was exhibited in the outside pond and patio of Elliott Hall, The University of North Carolina at Greensboro, from April 30 to May 6, 1972.

Color slides representing the exhibit are on file at the Walter Clinton Jackson Library, The University of North Carolina at Greensboro.

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[Faint signature and text]

WIND AND WATER WORK

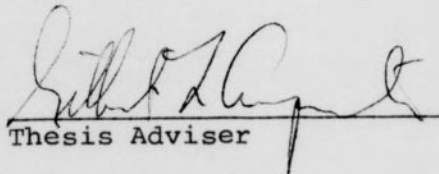
by

Marvin Lane Tadlock

A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Fine Arts

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Approved by


Thesis Adviser

APPROVAL PAGE

This thesis has been approved by the following
committee of the Faculty of the Graduate School at The
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Date of Examination

ACKNOWLEDGMENTS

I would like to express my deep appreciation to my wife, Judy, our daughter, Melanie, and to my parents. Many sacrifices were made by each of these people in my behalf, and I am truly grateful.

CATALOGUE

| <u>TITLE</u> | <u>DIMENSIONS IN INCHES</u> | | |
|----------------------------|-----------------------------|---------------|--------------|
| | <u>Height</u> | <u>Length</u> | <u>Width</u> |
| 1. WINDPIECE #1 | 101 | 22 | 20 1/4 |
| 2. WINDPIECE #2 | 101 | 32 1/4 | 39 |
| 3. WATERPIECE #1 | 80 | 18 1/4 | 18 1/4 |
| 4. WATERPIECE #2 | 153 | 64 | 39 |

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The following series of kinetic works was designed to use moving air (wind) and moving water as power sources and to establish limits of control over them, ranging from programmed movement to random movement. Balance is naturally a crucial factor in all of these pieces as they each make use of one or more counterweight systems to assure a reaction from the piece to the action of the particular power source.

"Wind Piece #1" was designed to operate with even the slightest breeze. This was accomplished by using light materials (wood and sheet steel) and applying some of the basic laws of physics in its design, namely the ones covering the moment of the force. Thus when a light breeze engages the blade, the movable portion of the piece, it is easily set into motion as the force of the breeze, is multiplied many times by the long perpendicular distance from the top of the blade to the axis.

This piece utilizes the knife type pivot which is virtually friction-proof, but at the same time limiting as to the amount of swing possible. In this case it is less than 100 degrees. It seems that the ideal wind piece of this

type must be able to move at least 180 degrees in order to completely negate the force of high winds.

With this in mind "Wind Piece #2" was built. It is made of cast aluminum and is much heavier than the first piece. It uses sealed ball bearings at the pivot point and is capable of 270 degrees of unrestricted movement. This piece, while less sensitive to a slight breeze than "Wind Piece #1," is able to handle gale force winds which makes it more suitable for permanent outside placing.

Movement of both pieces is limited, but not totally predictable, as they are always at the mercy of the wind. The only predictable factor is that once the action of the wind ceases the piece will self-right itself due to the reaction of the counterweight.

"Water Piece #1," on the other hand, was designed to make one precise and predictable movement. This one movement, however, approaches absurdity as the structurally permanent form of the obelisk slowly breaks in half, and the top half inverts and dumps its contents of so far unseen water into the remaining stationary bottom half, and then slams back to its original upright position.

The complete cycle takes about five minutes and it makes use of the water visually and audibly, while using it

as a physical kinetic force. This is accomplished by using moving water (a submergible pump in this case) to fill a hidden tank in the top of the obelisk, thus upsetting the equilibrium and causing it to pivot 180 degrees on an internal shaft where the tank can then empty itself. This emptying initiates the reverse movement as once again the equilibrium is disturbed. This piece could be made to be totally self-contained by adjusting it to completely recycle its own water, but here it makes use of the water in the pool in which it is placed.

"Water Piece #2" is capable of making complete 360 degree revolutions. Its movements however, are for the most part unpredictable as they depend to a great degree upon the momentum from previous movements. This particular piece uses a 64-inch long movement arm of four-inch steel tubing and is counterweighted with 60 pounds of steel. As the tubing is filled with water through a rotating union at the axis, the piece begins to lean and as the moment arm goes down the moment of force (torque) increases very rapidly causing a tremendous amount of momentum to propel the piece. This movement is in turn boosted as the four-inch tubing (open at its end) dumps its water while in the inverted position

leaving the heavy counterweight to add its power as it goes through the same process of trying to reach equilibrium.

"Water Piece #2" demands an isolated body of water in which to work as the centrifugal force actually slings the water out of the tubing adding a dynamic visual and audible effect to the total work.

All four pieces were intentionally made of rugged structural materials to better demonstrate the remarkable power potential of both moving air and moving water. Since the laws of balance and force operate without regard to size, any one of these pieces could be changed in size to suit the particular aesthetic requirement.