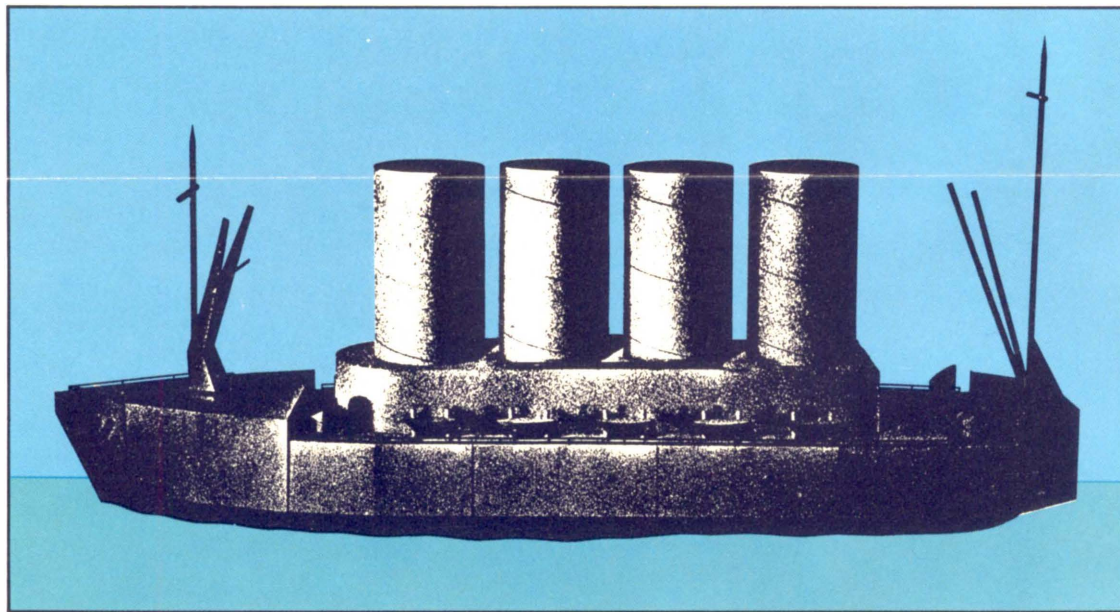


# Energy Conscious Design

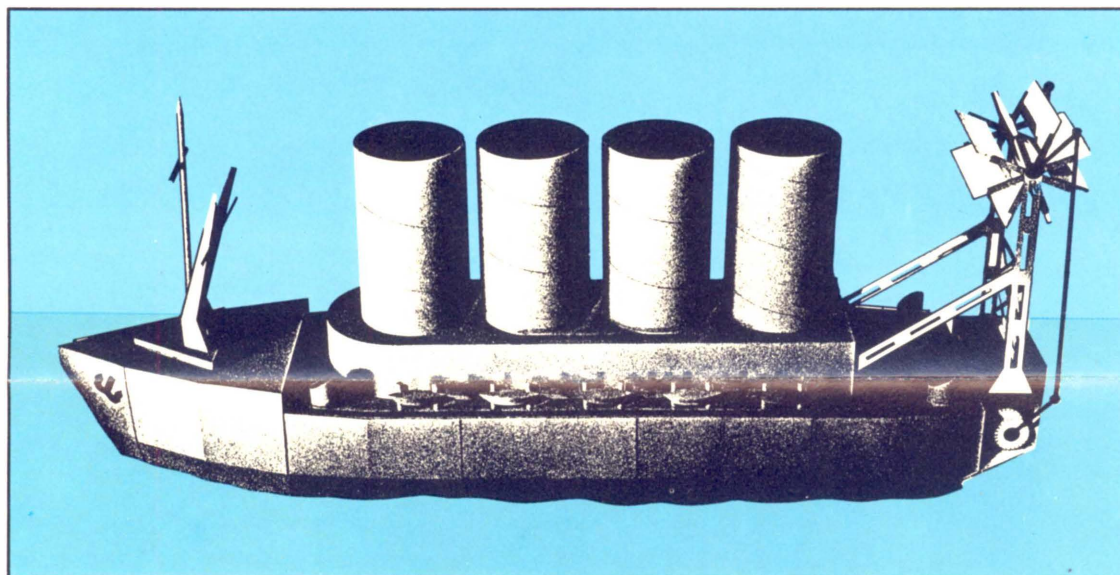
1  
Once upon a time there was a river, canaled, and archipelagoed city called Energy, which was dependent on great motored boats to move all its goods and all its good people across its waters.



2  
Accustomed to clouds of belching black smoke and the ear-numbing whirring of turbines, the people of Energy were shocked by the sunny blue skies and the tranquil quiet on the day their country ran completely out of fuel and their boats stopped moving.



3  
With an appropriate sense of urgency, the best and brightest scientists and engineers of Energy were marshalled together and charged with the task of finding an alternative way of moving the now-useless vessels. Many of these brainy persons looked to the winds continually blowing across the rivers, canals, and bays of Energy. But try as they might, they just couldn't find a way to get the wind to push the pistons that moved the arms that turned the propellers of the great boats.



An exhibition which is intended to bring energy conscious design into the mainstream of architectural practice and education

The Drexel Building  
15th and Walnut Streets  
2-6 May 1976

Energy Conscious Design is a project of the AIA Research Corporation and is supported by the Federal Energy Administration

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A typical office of 225 square feet with 5 watts per square foot lighting and 100 square feet of window consumes as much energy in a year as a small family car.

The World Trade Center in New York City uses more electricity than the entire city of Schenectady, NY, which has a population of 100,000.

The U.S. population grew by 54 per cent in the last three decades. But the various engines that do America's work increased 650 per cent, from 2.8 billion to 21 billion horsepower.

Burning 6000 100-watt light bulbs for one year consumes the energy of an acre of strip-mined coal.

Constructing and operating U.S. buildings takes 57 per cent of the electricity produced in the country. Lighting the buildings alone consumes about 25 per cent.

The thick adobe masonry wall of Indian pueblos captured and stored heat in winter, while the orientation of the dwellings shielded them from much of the summer sun and kept them cool inside. The Acoma pueblos were so efficient that they admitted 50 per cent more heat in winter than in summer.

Manufacturing one beverage bottle consumes as much energy as a 100-watt bulb uses in 4 hours.

A typical 1800-student high school can save the equivalent of an average teacher's salary by reducing energy consumption one watt per square foot.

Solar cells, which translate light into electricity, are similar to transistors. Transistor costs have been reduced 100,000 times since their commercial prototypes were introduced. If solar-cell costs were reduced only 100 times, they would supply electricity more cheaply than nuclear sources.

One day, a young inventor named Conscious watched the breeze push both him and his coattails along the docks. Instead of trying to get the wind to turn the screws, Conscious invented a sail to catch the wind and push the boats directly.

The first sail was modest, and although it got the boats to move it didn't get them to move very fast.

5  
The people of Energy, reasoning that if one sail worked a little then more sails would work a lot, then stuck scores of sails all over their boats.

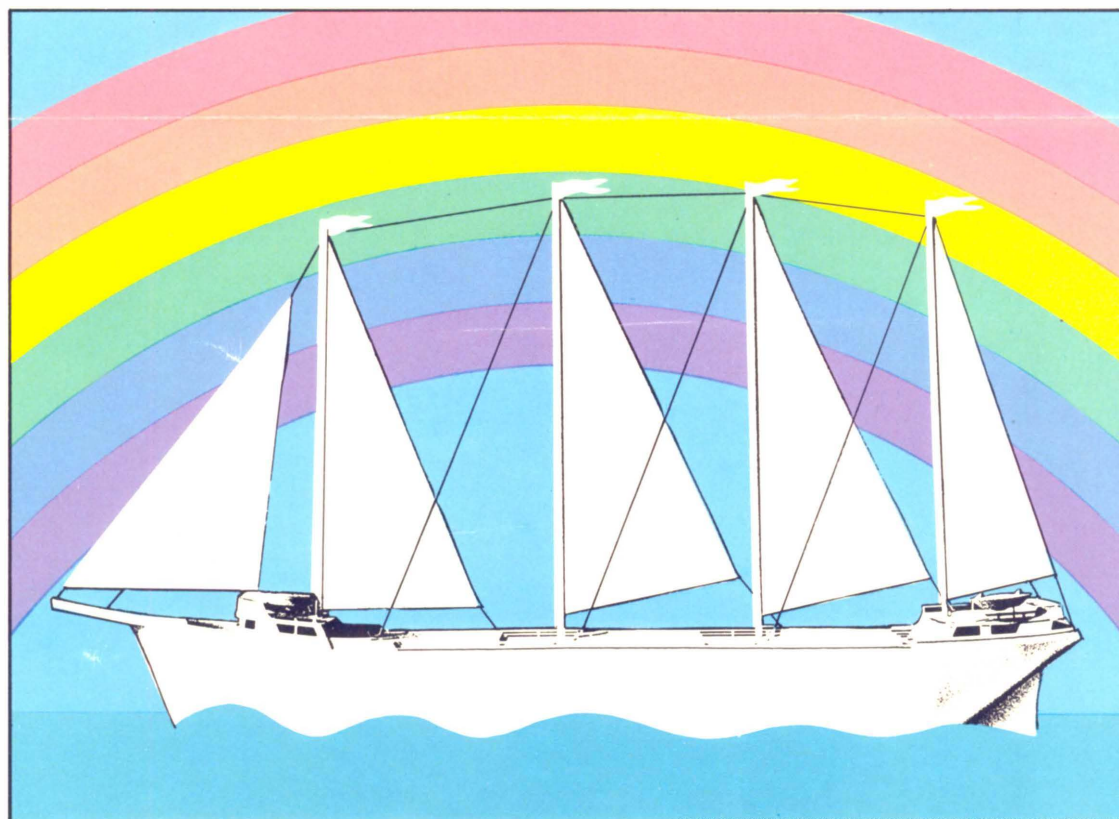
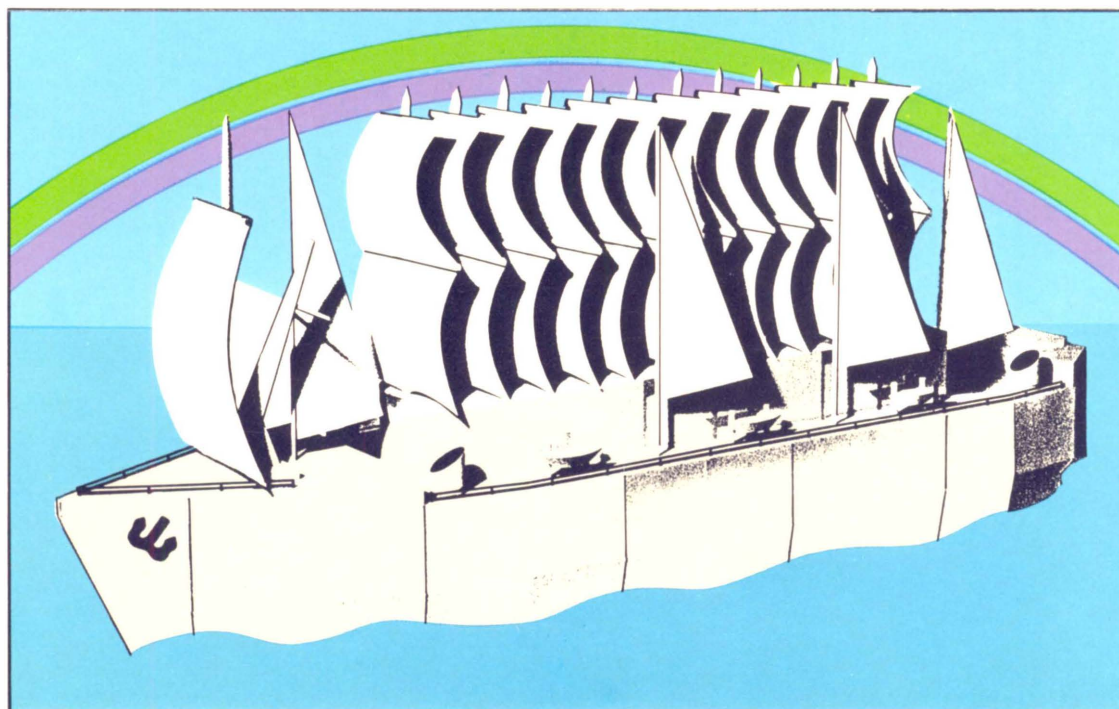
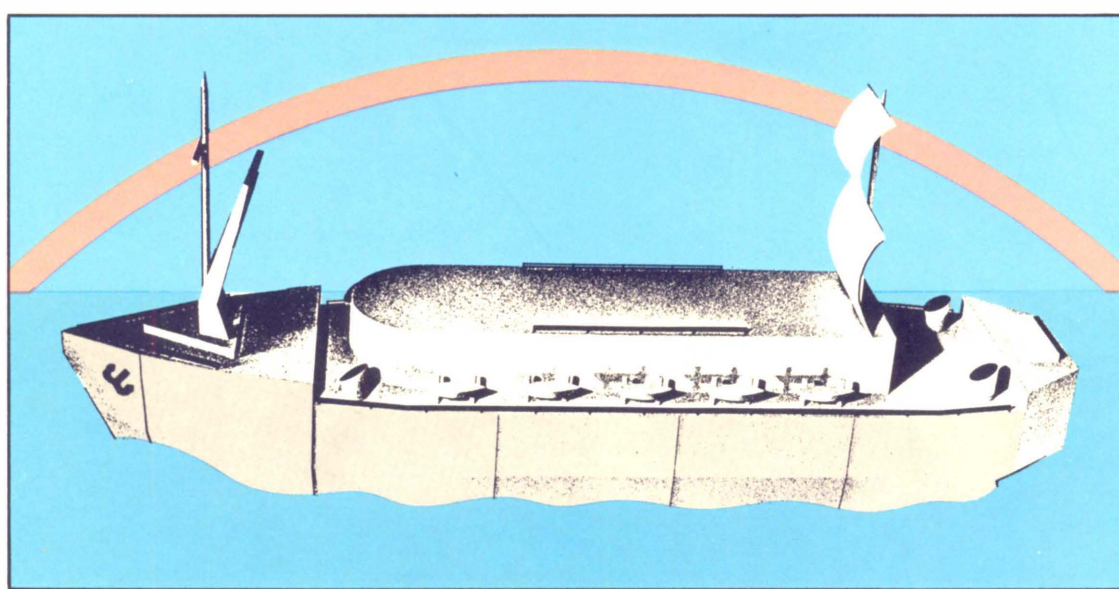
They did move a little faster, but not nearly fast or efficiently enough; and, worse, the boats became unmanageable.

6  
Finally, a young architect named Design, with that rare ability to perceive the obvious, recalled that a horse with a very long neck is not a giraffe.

The task, he realized, was to re-think concepts. And the solution was not to make the old boats work without fuel but to design or redesign boats that didn't need any.

The new boat designed to forsake fossil fuels and move with the breeze was fast and free. The people of Energy, to honor their boat and the process by which it evolved, named it, of course, *Energy Conscious Design*.

The End



Ten cows burp enough gas in one year to heat, cool, and make hot water for a small house.

About 30 per cent of America's energy consumption is for heating, cooling and lighting, and operating machines within, its buildings. This does not include the energy used to manufacture the building materials, to construct the buildings or to make the machines, but only the energy used daily to operate the buildings.

Consumers in Denmark, Switzerland, Sweden, West Germany and Canada use half as much energy as Americans. Yet these countries have living standards comparable to ours.

A porch light left on every night for a year uses more energy than the typical person in Haiti uses in a year.

Any appliance or utility that uses natural gas could use methane gas instead. The natural-gas requirements of a U.S. citizen average about 60 cubic feet per day; the methane equivalent could be had from 20 pounds of horse manure or 10 pounds of chicken or pig manure.

A tall evergreen hedge north of home can cut heating bills by 34 per cent in wind-swept areas and by 10 per cent in sheltered areas.

The Sears Building in Chicago uses more electricity than Rockford, IL, which has a population of 147,000.

Recently a large fast-food chain used 175,000,000 pounds of paper for one year's packaging. That requires the yield from 315 square miles of forest, an area larger than that of the five boroughs that make up New York City.

Tenants in master-metered buildings, where the owner pays utilities, use 30 per cent more energy than tenants who pay their own utility bills.

Exhibition: Murphy Levy Wurman  
Fabrication: Frank Whittock

Special thanks to Herman Miller for furniture, and Peter Paul for energy giving candy