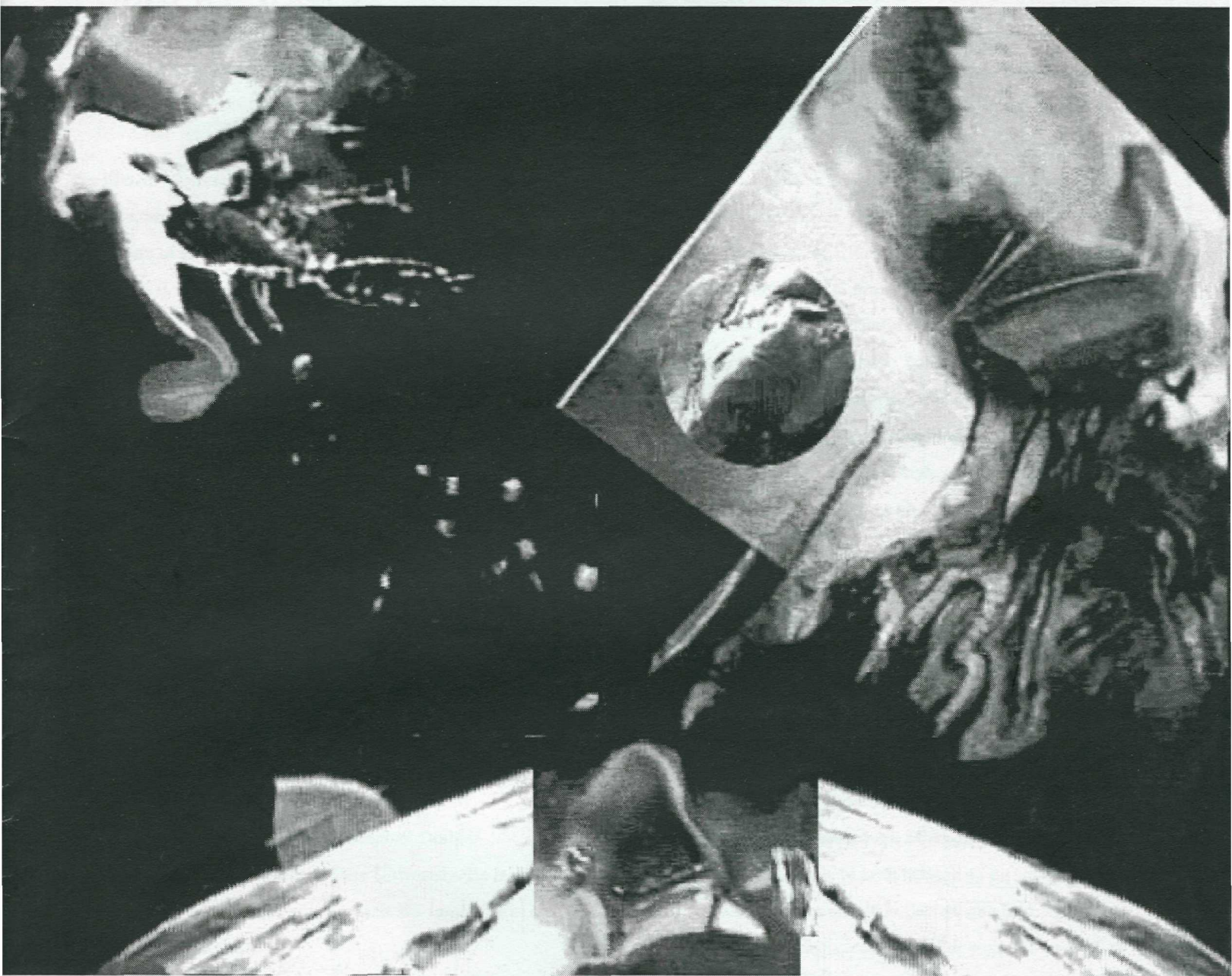


Y L E M



# Artists Using Science and Technology

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Vol.17/No. 4

Mar / Apr



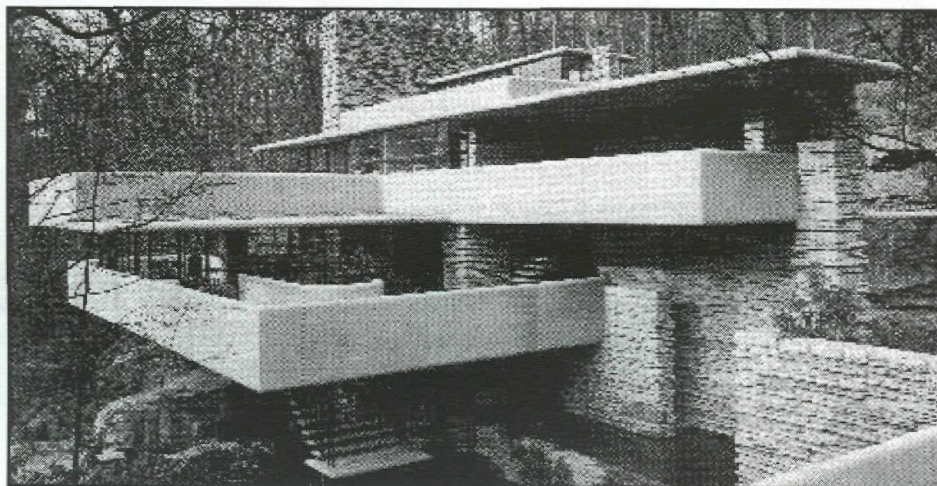
# The Invisible Cantilever

*An Installation*  
by Karl Bohringer and Ken Goldberg

"Although the senses occasionally mislead us respecting minute objects, such as are so far removed from us as to be beyond the reach of close observation, there are yet many other of their informations, the truth of which it is manifestly impossible to doubt; as for example, that I am in this place, seated by the fire, clothed in a winter dressing gown, and that I hold in my hands this piece of paper..." Descartes, *Meditations*.

A I/I millionth scale version of Frank Lloyd Wright's Fallingwater, invisible to the naked eye.

This project considers the distance between the viewer and what is being viewed. How does technology alter our perceptions of distance, scale, and structure? Technologies for viewing continue to evolve, from the camera obscura to the telescope to the atomic force microscope; each new technology raises questions about what is real versus what is an artifact of the viewing process. For example, how does the framed vision of the microscope differ from the framing induced by the World Wide Web? Discontinuities induced by these media can undermine what Husserl calls the "inner" and "outer" horizons of experience. These horizons are vital to architecture and to what we might call "telepistemology:" the study of how viewing at a distance influences belief, truth, and perception.



FRANK LLOYD WRIGHT'S FALLINGWATER

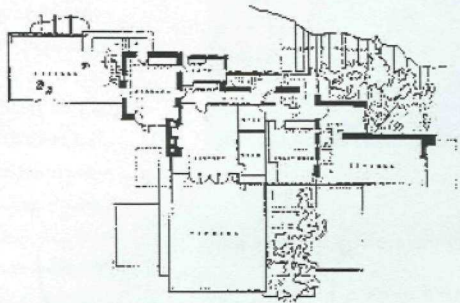
13  
Editor's note: This is at the micron level rather than nano but I believe it is a good indication of current art directions.



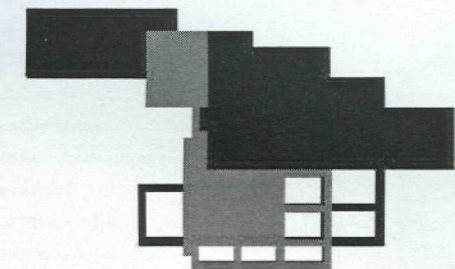
## Why Fallingwater?

In 1991, a poll of architects taken by Architectural Record found Fallingwater to be the single most important building of the last 100 years. To reflect features on the site, Wright employed the cantilever: a horizontal structure for distributing force, "the true earth-line of human life" (Wright).

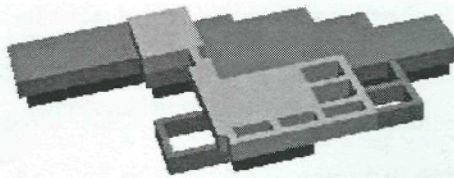
Cantilevers are also used to measure forces in Micro Electro Mechanical Systems (MEMS): miniature devices etched from silicon. Examples of current research can be found at many labs, including UC Berkeley, Cornell and UCLA. For example, many automotive air bags measure the deflection of a MEMS can-



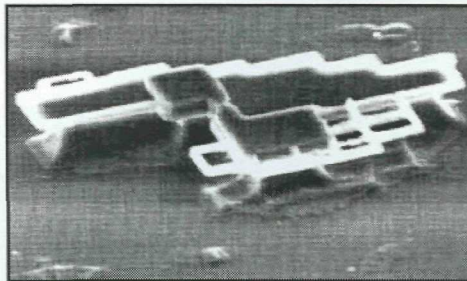
FRANK LLOYD WRIGHT'S FLOORPLAN.



CAD MODEL.



CAD MODEL.



.1 MM (WIDTH OF A HUMAN HAIR).  
tilever to detect collisions.

The installation includes an optical microscope, halogen lamps, and a copy of Descartes' *Meditations*. For more information:

- *Real World*. 16 Jan-I Mar 1997:  
New Langton Arts, 1246 Folsom St.,  
San Francisco, CA 94103. (415) 626-  
5416. Jan 16, 7:00 pm: Opening. Feb.  
4, 7:30 pm: Panel on Scale and  
Structure with Daniel B-H. Lieber-  
mann (student of Wright), Kris  
Pister, and Glen Seator.

- *Vision and Visuality*. Hal Foster, ed.  
Bay Press, 1988.

- *Technology and the Politics of  
Knowledge*. Andrew Feenberg, ed.

Oxford University Press, 1996.

- Ken Goldberg and Sue Spaid.  
*Telepistemology*. WiReD, 4(12),  
page 232. December 1996.

- Rupert Jenkins. *Witness: The  
Invisible Cantilever*. West Magazine.  
page 16. Winter 1997.

- Peter Wayner. *8 Rooms, 4 Baths,  
No Vu.* New York Times Sunday  
Magazine, page 21. March 10, 1996.

- <http://telegarden.aec.at>

- <http://www.ieor.berkeley.edu/~goldberg/flw/print.html>

- Or contact Ken Goldberg at  
[goldberg@ieor.berkeley.edu](mailto:goldberg@ieor.berkeley.edu).

Our thanks to Bruce Donald, Hubert  
and Stuart Dreyfus, Ann Goldberg, Peter  
Lunenfeld, Kathy Mancall, Eric Paulos, David  
Pescovitz, Debra Pughe, Rupert Jenkins, Ali  
Sant, Lorelei Stewart, and Peter Wayner.