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## Obituary

ALFRED H. FUCHS, EDITOR  
Bowdoin College

### RICHARD LANGTON GREGORY (1923–2010)

BRUCE BRIDGEMAN  
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A giant among cognitive scientists, Richard L. Gregory died on May 17th at the age of 86. While most of us remember him for his pioneering work in perception, he had many other interests and accomplishments as well. Though I knew him only late in his life, he always had a spark of boyish curiosity and enthusiasm. Gregory had a way of cocking his head and looking down at his conversation partners; with his height, he looked down at almost everyone, literally but never figuratively. He must have been born tall—it's impossible to imagine him any other way.

Gregory was born into an academic family. His father Christopher was the first director of the University of London Observatory, and he attended a public school (in North America, a private school). His education was interrupted by WWII, during which he served in the signals branch of the Royal Air Force. Continuing on the academic fast track, in 1947 he entered Downing College, Cambridge, studying philosophy and experimental psychology, tutored by Bertrand Russell in the small world of British academia at the time. After earning his degree in 1950, he stayed in Cambridge to work at the Medical Research Council applied psychology unit under Frederic Bartlett, one of Bartlett's last students and, for Gregory, one of his most treasured mentors.

In 1953 Gregory obtained a staff position as university demonstrator under Oliver Zangwill, eventually gaining independence as a lecturer, and set to work researching and inventing. He became half psychologist and half engineer, developing among other things a method for adaptive optics decades before adaptive techniques were adopted in astronomy. His laboratory during this period was reportedly a tumble of half-finished inventions and experimental apparatus, much of it developed by Gregory himself. He generated both patents and scientific papers in large numbers.

1 Over his years at Cambridge, Gregory leaned more  
2 and more toward experimental psychology and espe-  
3 cially perception, oriented in the Helmholtz tradition  
4 of perception as unconscious inference. The brain,  
5 taking fleeting hints from the senses, reconstructs an  
6 internal model of the outside world, usually surpris-  
7 ingly accurate but, in the hands of the psychologist,  
8 somewhat fragile. It is that model that we perceive,  
9 not the world itself. Along with contemporary psy-  
10 chophysicists, Gregory saw psychological research  
11 on perception as a kind of destructive testing; just  
12 as an engineer twists a screw until it breaks to deter-  
13 mine how strong it was, the psychophysicist turns  
14 the screws on perceptual processes until they break,  
15 giving information that is inconsistent with what is  
16 in the physical environment. This is why his lifelong  
17 fascination with illusions was so productive.

18 Most psychologists know Richard Gregory pri-  
19 marily from his small 1966 masterpiece *Eye and Brain*  
20 and its subsequent editions. Written at a level that can  
21 be understood by undergraduates but full of creative  
22 ideas and perspectives, the book has defined what  
23 perceptual research is about for two generations  
24 of experimental psychologists. Written during his  
25 Cambridge years, the book uses illusions to illustrate  
26 perceptual processes, with a strong top-down com-  
27 ponent that countered the bottom-up influence of  
28 exploding neurophysiology at the time. An example  
29 of an original idea in the book is Gregory's theory that  
30 the Müller-Lyer illusion ( $\leftarrow\rightarrow$  vs.  $\rightarrow\leftarrow$ )  
31 is due to familiar perspective from dihedral angles in  
32 corners of carpentered environments. The first figure  
33 above corresponds to a perspective view of a corner  
34 with its edge close to the observer, and two implied  
35 walls slanting back from it, such as the edge of a build-  
36 ing; the other figure corresponds to looking into the  
37 corner of a room, where the line between the arrows  
38 represents the most distant part of the figure. Since  
39 distant objects are judged to be larger than near ob-  
40 jects of the same retinal size (unconscious inference  
41 again), the arrows-out line seems longer. It's a clever  
42 idea, but it turned out to be wrong—the figures at the

ends of the line didn't have to be arrows. They could  
be circles, pitchforks, or practically anything else that  
puts some stimulus in the right place. A more likely  
explanation of the illusion is low-pass spatial-frequen-  
cy filtering in early vision. It is a credit to Gregory's  
scientific integrity that when confronted with these  
demonstrations, he freely admitted that his original  
hypothesis had been wrong.

In 1967 an opportunity arose that Gregory could  
not resist, combining his interests in psychology and  
technology. The University of Edinburgh appointed  
him Professor of Bionics, and he became a cofounder  
of the Department of Machine Intelligence and Per-  
ception, the first such center in Britain. But there were  
conflicts; the Church of Scotland withdrew its offer  
of an unused church as lab space when it learned  
that Gregory intended to develop robots there! In  
1970 he moved to the University of Bristol, where he  
remained for the rest of his career.

More books followed; *The Intelligent Eye* in 1970  
and *Mind in Science* in 1981. Also in 1970 Gregory met  
Frank Oppenheimer, founder of the interactive Explor-  
atorium in San Francisco. He built a similar center in  
Bristol, the Exploratory, and designed most of the ex-  
hibits himself. I met Gregory during his several visits  
to the San Francisco bay area when he came down to the  
University of California at Santa Cruz, and we shared  
a position on the masthead of Behavioral and Brain  
Sciences as the perception editors. Even though I had  
been in the field many years, I still looked up to him  
(literally and figuratively) as the grand old man of per-  
ception, a larger-than-life figure. He loved word-play,  
and never lost his open and jolly sense of humor.

Throughout his career Gregory continued with  
more than 150 scientific papers, new books, and  
enormously popular public lectures. In his eighties  
he produced a new edition of his monumental *Ox-  
ford Companion to the Mind*. As he became world-  
famous, he collected honorary degrees, Royal Soci-  
ety memberships, and numerous other prizes and  
recognitions, but never lost his humor, humility, and  
irresistible enthusiasm for science.