



**Human
Factors
and
Ergonomics
Society**

FELLOW PROFILE

Name: Gary Klein

**Degrees, certifications,
etc.:** Ph.D. in experimental
psychology, 1969

Current status: Senior scientist at
MacroCognition LLC

Home page: www.macro cognition.com



Biography (How you got involved in the field, your major career activities and milestones):

I became interested in the field ever since I read Calvin Hall's book "A Primer of Freudian Psychology" when I was 13 years old. I majored in psychology in college, then got my Ph.D. in experimental psychology. I have worked in three settings: university, government and private industry. The first phase of my career was spent as an Assistant Professor of Psychology at Oakland University, in Rochester Michigan (1970-1974). The second phase began when I took a position as a Research Psychologist at the Air Force Human Resources Laboratory in 1974. The Arab oil embargo of 1973 meant that pilots needed to do more of their training in simulators, which raised the question of how expertise develops and how it can be fostered in an artificial environment. The third phase began when I founded my own R&D company in 1978. My company, Klein Associates, grew to 37 people by the time it was acquired by Applied Research Associates (ARA) in 2005. During this phase I conducted research projects on naturalistic decision making, sensemaking, and replanning, and developed methods for Cognitive Task Analysis. I joined MacroCognition LLC in 2009.

Employment History (List top 5 positions):

Assistant Professor of Psychology, Oakland University, Rochester Michigan 1970-1974.
Research Psychologist, Air Force Human Resources Laboratory, Wright-Patterson Air Force Base 1974-1978.
Chief Scientist and Chairman of the Board, Klein Associates Inc., 1978-2005.
Senior Scientist, Klein Associates Division of ARA 2005-present.
Senior Scientist, MacroCognition LLC 2009-present.

What were your significant contributions to the field?

Developed Recognition-Primed Decision (RPD) model of how people actually make decisions.
Developed Critical Decision method (CDM) for performing Cognitive Task Analyses.
Helped to initiate the Naturalistic Decision Making (NDM) movement in 1989.
Helped to start the Cognitive Engineering and Decision Making (CEDM) Technical Group in the Human Factors and Ergonomics Society in 1996.
Developed a naturalistic model of sensemaking, the Data/Frame model, to describe the way people interpret situations while simultaneously clarifying what counts as data in ambiguous situations.
Developed a Management-by-Discovery strategy for replanning in complex situations when

faced with ill-defined goals and wicked problems.

Klein, G. (1998). Sources of power: How people make decisions. MIT Press.

Did you receive any notable awards or recognition during your career?

Fellow of the American Psychological Association (Division 19).

Fellow of the Human Factors and Ergonomics Society.

Jack A. Kraft Innovator Award from the Human Factors and Ergonomics Society (2008).

Which articles in the journal *Human Factors* would you say were the most influential to you and your research or practice?

Cannon-Bowers, J.A., Salas, E., & Pruitt, J.S. (1996). Establishing the boundaries of a paradigm for decision-making research. *Human Factors*, 38:193-205.

Driskell, J.E., & Salas, E. (1992). Collective behavior and human performance. *Human Factors*, 34: 277-288.

Endsley, M.R. (1995a). Toward a theory of situation awareness in dynamic systems. *Human Factors*, 37: 32-64.

Endsley, M.R. (1995b). Measurement of situation awareness in dynamic systems. *Human Factors*, 37: 65-84.

Flin, R., Slaven, G., & Stewart, K. (1996). Emergency decision making in the offshore oil and gas industry. *Human Factors*, 38: 262-277.

Pradhan, A.K., Hammel, K.R., DeRamus, R., Pollatsek, A., Noyce, D.A., & Fisher, D.L. (2005). *Human Factors*, 47: 840-852.

Schneider, W. (1985). Training high-performance skills: Fallacies and guidelines. *Human Factors*, 27: 285-300.

Please provide any links to your online articles, essays, blogs, Wikipedia pages, etc., that pertain to your research, publications or practice.

www.macrocognition.com