

# Princeton University

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## Third Annual Report to the James S. McDonnell Foundation

from  
The Human Information Processing Group  
Princeton University

April 1989

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## Human Information Processing Group

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## **Third Annual Report to the James S. McDonnell Foundation**

*The Human Information Processing Group*

Princeton University

### **Introduction**

The Human Information Processing Group (HIP) at Princeton University is an interdisciplinary research effort to promote the study of human information processing and the man-machine interface. Created in 1986 with the support of the James S. McDonnell Foundation, HIP draws together faculty and staff from psychology, linguistics, philosophy, and the school of engineering. The principal operating arms of HIP are four laboratories: the Cognitive Science Laboratory, the Cognitive Motivation Laboratory, the Robotics and Expert Systems Laboratory, and the Engineering Anomalies Laboratory.

Administratively, HIP reports to the Dean of the Faculty through the Chairman of the Psychology Department, but its work is directed by a Steering Committee of senior faculty members who meet regularly to discuss scientific and policy questions of common concern.

After three years of collaboration, it is evident that HIP has enriched the research of its immediate participants. There are also wider effects. New appointments to the faculty are being made to strengthen and enlarge the effort, and new courses are being offered to share new developments with graduate and undergraduate students.

The organization of this part of the report corresponds to the budgetary division between Level I and Level II. Level I, supplemented by grants and contracts from various private sources and federal agencies, supports the on-going work of the four Laboratories. Level II provides for mechanisms of interaction between the Laboratories and with the rest of the University.

## **Level I**

The Cognitive Science Laboratory has been home for research in several areas, including: lexical memory, automatic syntactic analysis, learning and instruction of problem solving skills, inductive reasoning, pragmatism and the role of simplicity in theory choice, and connectionism and neural networks. The Cognitive Motivation Laboratory has been investigating the social-psychological implications of the computer for non-technically oriented users. The Robotics and Expert Systems Laboratory continues its close collaboration with the University's Computing and Information Technology Computer Graphics Laboratory, and has expanded its research program into connectionist theory and applications for robotics. The Engineering Anomalies Laboratory has continued to accumulate critical basic data on benchmark experiments with random physical systems and processes, has added new experiments with oscillatory and hydrodynamic systems, and has reorganized its immense computer database into a flexible, multi-purpose resource, now documented in four comprehensive publications.