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FINAL 15 Mar 92 TO 14 Mar 94

VISUAL NEURAL DEVELOPMENT AND CHROMATIC ABERRATION

F49620-92-J-0187

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The purpose of the research undertaken was to develop computational techniques and psychophysical methods for investigating the internal representation of visual information (shape, depth and color) in human observers. Some of the equipment needed was not available in Summer 1992. A no-cost one-year extension was requested and granted, and work on the project continued through March 1994. The following is a list of publications and presentations supported in whole or in part by the grant. A list of personnel is also included. One series of experiments (concerning non-Gaussian signal detection theory) is not yet completed. It will be prepared for publication with proper acknowledgement of support from AFOSR

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FINAL REPORT

AFOSR Grant #F49620-92-J-0187 "Visual neural development and chromatic aberration"

Duration: April 1992-March 1993; No-cost extension to March 1994.

Period reported: April 1992-present

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The purpose of the research undertaken was to develop computational techniques and psychophysical methods for investigating the internal representation of visual information (shape, depth and color) in human observers. Some of the equipment needed was not available in Summer 1992. A no-cost one-year extension was requested and granted, and work on the project continued through March 1994. The following is a list of publications and presentations supported in whole or in part by the grant. A list of personnel is also included. One series of experiments (concerning non-Gaussian signal detection theory) is not yet completed. It will be prepared for publication with proper acknowledgement of support from AFOSR.

A. PUBLICATIONS IN REFEREED JOURNALS (acknowledging the grant)

Chan, A. S., Paulsen, J. S., Salmon, D. P., Butters, N., and Maloney, L. T. (1993), Assessment of the semantic network in Alzheimer's disease patients. *Journal of Cognitive Neuroscience*, in press.

Young, M., Landy, M. S., & Maloney, L. T. (1993), A perturbation analysis of depth perception from combinations of texture and motion cues. *Vision Research*, 11, 2685-2696.

Landy, M. S., Maloney, L. T., Johnston, E. B., & Young, M. (1994), In defense of weak fusion: Measurement and modeling of depth cue combination. *Mathematical Studies in Perception and Cognition* 91-3. New York: New York University. *Vision Research: in press, July 1994.*

Wuerger, S. M., Maloney, L. T., & Krauskopf, J. (1994), Proximity judgments in color space: tests of a Euclidean color geometry. *Mathematical Studies in Perception and Cognition* 93-1. *Vision Research: Under review, May 1994..*

Knoblauch, K. & Maloney, L. T. (1994), Tests of the indeterminacy of chromatic mechanisms from chromatic discrimination data. *Mathematical Studies in Perception and Cognition* 94-1. *Vision Research: Under review, May 1994..*

Maloney, L. T. & Mayans, R. A. (1994), Retinal sampling and surface reconstruction. *In preparation.*

Maloney, L. T., Landy, M. S., & Ferraro, M. (1994), Representation and action: Decision making in perception and cognition. *In preparation.*

Books acknowledging the grant.

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Landy, M. S., Pavel, M., and Maloney, L. T. [Eds] (1994), *Exploratory Vision: The Active Eye*. New York: Springer-Verlag, first round drafts by July 15, 1994

Maloney, L. T. (1995), *Mathematical and Statistical Methods for Visual Neuroscience*. In preparation.

B. BOOK CHAPTERS (acknowledging the grant)

Maloney, L. T. (1992), Color constancy and color perception: the linear models framework. In Meyer, D. E., and Kornblum, S. [Eds.], *Attention & Performance XIV: Synergies in Experimental Psychology, Artificial Intelligence, and Cognitive Neuroscience - A Silver Jubilee*. (Cambridge, Massachusetts: MIT Press).

Maloney, L. T., Wuerger, S. M., & Krauskopf, J. (1994), A method for testing Euclidean representations of proximity judgments in linear psychological spaces. In Luce, R. D., D'Zmura, M. Hoffman, D., Iverson, G., & Romney, A. K. [Eds], *Geometric Representations of Perceptual Phenomena: Papers in Honor of Tarow Indow's 70th Birthday*. (Hillsdale, NJ: Lawrence Erlbaum). in press.

Maloney, L. T. (1994), Exploratory vision: Implications for sampling, reconstruction, and calibration. In Landy, M. S., Pavel, M., and Maloney, L. T. *Exploratory Vision: The Active Eye*. New York: Springer-Verlag, in preparation

C. GRADUATE STUDENTS (working on projects related to the grant)

Hon, Alex, Psychology, PhD, US

D. POST-DOCTORATES

Poirson, Allen, Center for Neural Science, PhD Stanford 1991, USA

E. AWARDS

Golden Dozen Award, New York University, 1994.

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