CURRICULUM VITAE

WALTER MAKOUS
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PERSONAL DATA

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EDUCATION

Degree	Date	University	Field
B.S.	1958	University of Wisconsin	Psychology
M. Sc.	1961	Brown University	Psychology
Ph. D.	1964	Brown University	Psychology

PROFESSIONAL POSITIONS

Academic

Assistant Professor of Psychology and Lecturer in Physiology and Biophysics, University of Washington, 1966-69
Associate Professor of Psychology, University of Wash, 1969-74
Professor of Psychology, University of Washington, 1974-79
Professor of Psychology, Ophthalmology, and Visual Science, University of Rochester, 1979-1995
Professor of Brain and Cognitive Sciences, Ophthalmology, and Visual Science, University of Rochester, 1995-2008.
Professor of Brain and Cognitive Sciences, and Visual Science, University of Rochester, 2008-present.

Administrative

Acting director, Joint Physiology-Psychology Degree Program, University of Washington, 1971-72
Director, Center for Visual Science, University of Rochester, 1979-90;
Acting Director, 1997-8.

Industrial

Staff Member, IBM Research, 1963-66
Visiting Scientist, IBM Research, 1970-71

HONORS

Fellow
American Association for the Advancement of Science
Optical Society of America

Listed in Who's Who in America

Member
Phi Beta Kappa
Sigma Xi
Phi Eta Sigma

Predoctoral Fellow
Wisconsin Alumni Research Foundation, 1958-59
National Science Foundation, 1959-62
Corinna Borden Keen Trust, Brown University, 1962-63

Honors in Psychology, University of Wisconsin, 1958

ELECTED OFFICE

Research Section Committee on Visual Psychophysics and Physiological Optics, Association for Research in Vision and Ophthalmology: Member, 1975-77; Chair, 1977.

EDITORSHIPS

Consulting Editor:
Sensory Processes, 1977-79

Topical Editor for Vision and Color:
Journal of the Optical Society of America A, 1982-86

Feature editor (with T. Cohn) on Detection and Identification:
Journal of the Optical Society of America, 1985

Feature editor (with J. Larimer, J. Farrell, and W. Glenn) on Applied Vision:
Journal of the Optical Society of America, 1989

Feature editor (with J. Thomas) on Control of Sensitivity:
Journal of the Optical Society of America, 1996

MEMBERSHIP ON GOVERNMENT COMMITTEES

Special Study Sections, National Eye Institute
Research grants, 1976, 1982, 1986
Training grants and conferences, 1991, 1992

Panel on Sensory Processes
National Science Foundation, 1977-80; 1982

Advisory Committee for Applied Science and Research Applications Policy
National Science Foundation, 1978-81

Presidential Young Investigator Awards Program Review Committee
Division of Behavioral and Neural Sciences
National Science Foundation, 1984

Special Study Section: Small Business Innovative Research
National Institutes of Health, 1989, 1992, 1994

OTHER PROFESSIONAL ACTIVITIES

Northwest representative and charter member, Steering Committee for the West Coast Regional Consortium of Universities in the Neurosciences, 1976-79.

Co-host (with Davida Teller) of the meeting of the Second Study Group for Human Vision, Seattle, June, 1978.

Working Groups of the Vision Committee, National Academy of Science - National Research Council:
Energy Saving Through More Efficient Lighting, 1978-79
Night Vision, 1985-86

Host and Chairman of the Organizing Committees for the CVS Symposia:
"Relating Physiology to Psychophysics," 1981;
"Relating Physiology to Morphology in the Visual System," 1982.
"New Insights on Visual Cortex," 1988.

Member (with J. Larimer, J. Farrell, and W. Glenn) of the organizing committee for the topical meeting on Applied Vision, co-sponsored by the Optical Society of America and NASA, San Francisco, July 12-14, 1989.

Member, Advanced Helicopter Pilotage Advisory Board, Center for Night Vision & Electro-optics, Department of the Army, 1991-1992

Committees of the Optical Society of America:
- Coordinating for Vision and Physiological Optics, 1983-89
- Coordinating for Vision and Medical Optics, 1983-89
- Fellows and Honorary Members, 1985-87
  - Chair, 1986
- Publications, 1985-90
- Ad Hoc Group to Evaluate Optical Society of America
- Publications Governance, 1990
- Ad Hoc Committee to Review the Journal of the Optical Society of America A, 1991
- Edgar Tillyer Award Committee, 2001-3
  - Chair, 2001-2

Member, ANSI/HFES-100 Revision Committee: American National Standard for Human Factors Engineering of Visual Display-terminal Workstations:
- Subcommittee on Displays, 1992-1995;
- Document Preparation Team, 1995-2001;
- Subcommittee on Integration, 1999-2000;
- Editor, Visual Displays, 2002-2006.
- Chair, Subcommittee on Displays, 2011.

Program Chair, the Visual Performance Technical Group, for the annual meeting of the Human Factors and Ergonomics Society, 2001.

Co-Chair, with Peter Hancock, HFES Special Session: Issues Concerning Human Factors Contributions to Counter-Terrorism and Anti-Terrorism Efforts, 2001.

Member, Aviation Security Scientific Information Support Team, 2001-3.

CONSULTING

General Telephone and Telegraph, 1968
Little, Brown and Company, 1968-71
Legal Firms in Alaska and Washington, 1969-74
Bausch and Lomb, 1981-82
National Space and Aeronautics Administration, 1982
Air Force Office of Scientific Research, 1982, 1987
International Business Machines Corporation, Research Division, 1983-85.
Vision Committee, National Research Council-National Academy of Science
    Energy Saving Through More Efficient Lighting, 1978-79
    Night vision, 1985-6
    Changes in vision during long-term space flight, 1986
Night Vision Laboratory, US Army, Fort Belvoir, Va., 1990-92
Lighting Technology Group, Ford Motor Co., 1992
Hong Kong University of Science and Technology, Department of Computer Science, 1993-94
Dimension Technologies, Inc., Rochester, N. Y., 1992-3, 1995-7, 2000
Toymax, Inc., 1997-8
Silicon Light Machines, 1998-9
National Eye Institute, Vis B study section, 1999
American Institute of Biological Sciences, 2000-03
University of Melbourne, 2000
Brown, Raysman, Millstein, Felder, & Steiner, patent attorneys, 2000
Eastman Kodak Company, 2001-3
Weil, Gotshal & Manges, attorneys, 2003
Oxford University Press Cognitive Psychology Advisory Panel, 2006-present
Rochester Institute of Technology. Psychology Department Advisory Council, 2006-present

MEMBERSHIPS AND PROFESSIONAL AFFILIATIONS

American Psychological Association, 1959-75; 1986-88
    Divisions 3 and 6
Eastern Psychological Association, 1963-72
Psychonomic Society, 1968-2003
Association for Research in Vision and Ophthalmology, 1971-2005
Society for Neuroscience, 1979-2003
Human Factors and Ergonomics Society, 1985-2005
American Psychological Society, 1989-2003
Intersociety Color Council, 1999-2001
Vision Science Society, 2001-5
American Association for the Advancement of Science, 1958-present
Optical Society of America, 1968-present

GRANTS

Retinal processes of light adaptation, University of Washington Graduate Research Fund, 1967-68, $1,200.
Mechanisms in the perception of brightness, National Institute of Mental Health, 1968-69, $3,100.
New instrumentation program in neural processes underlying behavior (four co-investigators), Public Health Service, 1969-70, $27,000.
Visual increment thresholds (D. Teller, co-investigators), National Institute of Neurological Diseases and Blindness, 1968-71, $77,000.
Retinal processes, University of Washington Graduate Research Fund, 1971-72, $2,700.
Duplicity theory and the Stiles-Crawford effect, National Eye Institute, 1972-75, $67,000.
Development of receptive fields, University of Washington Graduate Research Fund, 1973, $2,500.
Duplicity theory and the Stiles-Crawford effect, National Eye Institute, 1976-78, $103,000.
Biogenic amines and function of the brains of alcoholic rats and their offspring, Alcoholism and Drug Abuse Institute, University of Washington, 1976, $7,700.
Visual Science Training Grant (D. Teller, co-investigator), National Eye Institute, 1976-81, $125,000.
Effects of enthanol on the nigro-striatal dopaminergic system, Alcoholism and Drug Abuse Institute, University of Washington, 1977, $3,300.
Transient sensitization, University of Washington Graduate Research Fund, 1978, $3,200.
Duplicity theory and the Stiles-Crawford effect, supplement, National Eye Institute, 1978, $10,600.
Upgrading of Campus Computing Capability in APL, Graduate School Research Fund, 1979, $7,000 (shared with 4 coinvestigators).
Binocular rivalry, University of Washington Graduate Research Fund, 1979, $1,611.
Duplicity theory and the Stiles-Crawford effect, National Eye Institute, 1979-83, $163,824.
Interaction in the Human Visual System (S. Buck, coinvestigator), National Eye Institute, 1979-82, $113,384.
Visual Science Research Center Support, National Eye Institute, 1981, $38,919; 1981-82, $44,746.
Relating Physiology to Psychophysics, National Science Foundation, 1981, $7,615.
Relating Physiology to Morphology in the Visual System, National Science Foundation, 1982, $9,712.
Duplicity Theory and the Stiles-Crawford effect, National Eye Institute, 1983-84, $9,384.
Visual Science Research Center Support, National Eye Institute, 1983-88, $529,393.
Schematic Retina, National Eye Institute, 1984-89, $348,916.
Eyetracker for Research on Human Vision, National Eye Institute, 1986-87, $237,000.
CVS Symposium: New Insights on Visual Cortex, Air Force Office of Scientific Research, 1988, $15,433.
Visual Science Research Center Support, National Eye Institute, 1988-1993, $747,181.
Schematic Retina, National Eye Institute, 1989-94, $581,788.
Training in Visual Science, National Eye Institute, 1990-1995, $785,652
Schematic Retina, National Eye Institute, 1994-98, $450,029.
Schematic Retina, National Eye Institute, 1998-2003, $567,862.

MAJOR PUBLICATIONS

1. Makous, W., Nord, S., Oakley, B., & Pfaffmann, C. (1963). The gustatory relay in the medulla. In Y. Zotterman (Ed.), Proceedings of the First International Symposium on Olfaction and Taste, (pp. 381-393). NYC: Pergamon Press.
2. Makous, W. (1964). Photoreception in the horseshoe crab : IBM Research Report RC-1305.
3. Makous, W. (1966). Dermoptical perception. Science, 152, 1109.
4. Makous, W. (1966). Cutaneous color sensitivity: Explanation and demonstration. Psychological Review, 73, 280-294.
5. Makous, W. (1968). A transient Stiles-Crawford effect. Vision Research, 8, 1271-1284.
6. Woods, S., Makous, W., & Hutton, R. (1968). A new technique for conditioned hypoglycemia. Psychonomic Science, 10, 389-390.
7. Makous, W., & Gould, J. D. (1968). Effects of lasers on the human eye. IBM Journal of Research and Development, 12, 257-271.
8. Gould, J. D., & Makous, W. (1968). Vision and lasers: Human factors of laser displays. Information Display, 5, 25-30.
9. Hunt, E., & Makous, W. (1969). Some characteristics of human information processing. Advances in Information Systems Sciences, 2, 283-335.
10. Makous, W. (1969). Conditioning in the horseshoe crab. Psychonomic Science, 14, 4-6.
11. Woods, S., Makous, W., & Hutton, R. (1969). Temporal parameters of conditioned hypoglycemia. Journal of Comparative and Physiological Psychology, 69, 301-307.
12. Woods, S., Hutton, R., & Makous, W. (1970). Conditioned insulin secretion in the albino rat. Proceedings of the Society of Experimental Biology and Medicine, 133, 964-968.
13. Hutton, R., Woods, S., & Makous, W. (1970). Conditioned hypoglycemia: Pseudoconditioning controls. Journal of Comparative and Physiological Psychology, 71, 198-201.
14. Makous, W. (1971). Visual and optical factors in wafer-to-mask alignment. IBM Research Report, RC-3515.
15. Clifton, L., & Makous, W. (1973). Iodate poisoning: Early effect on regeneration of rhodopsin and the ERG. Vision Research, 13, 919-924.
16. Wooten, B. R., & Makous, W. (1973). Test of Brindley's after-image hypothesis. Journal of the Optical Society of America, 63, 1268-1269.
17. Makous, W. (1974). Optimal patterns for alignment. Applied Optics, 13, 659-664.
18. Makous, W., & Boothe, R. (1974). Cones block signals from rods. Vision Research, 14, 285-294.
19. Makous, W., Teller, D., & Boothe, R. (1976). Binocular interaction in the dark. Vision Research, 16, 473-476.
20. Porte, D., Jr., Robertson, R. P., Halter, J. B., Kulkosky, P. J., Makous, W., & Woods, S. (1977). Neuroendocrine recognition of glucose: The gluco-receptor hypothesis and the diabetic syndrome. In Y. Katsuki, M. Sato, S. Takagi, & Y. Oomura (Eds.), Food Intake and Chemical Senses, (pp. 331-342). Tokyo: University of Tokyo Press.
21. Makous, W., & Sanders, R. K. (1978). Suppressive interactions between fused patterns. In J. C. Armington, J. Krauskopf, & B. R. Wooten (Eds.), Visual Psychophysics and Physiology, (pp. 167-179). New York: Academic Press.
22. Lai, H., Quock, R. M., Makous, W., Horita, A., & Jen, L. S. (1978). Methylazoxymethanol acetate: Effect of postnatal injection on brain amines and behavior. Pharmacology, Biochemistry and Behavior, 8, 251-257.

23. Lai, H., Makous, W., Quock, R. M., & Horita, A. (1978). Visual deprivation affects serotonin levels in the visual system. Journal of Neurochemistry, 30, 1187-1189.
24. Lai, H., Makous, W., Horita, A., & Leung, H. (1979). Effects of ethanol on turnover and function of striatal dopamine. Psychopharmacology, 61, 1-9.
25. Buck, S. L., Peeples, D. R., & Makous, W. (1979). Spatial patterns of rod-cone interaction. Vision Research, 19, 775-782.
26. Makous, W., & Peeples, D. R. (1979). Rod-cone interaction: Reconciliation with Flamant and Stiles. Vision Research, 19, 695-698.
27. Pulos, E., Raymond, J. E., & Makous, W. (1980). Transient sensitization by a contrast flash. Vision Research, 20, 281-288.
28. Buck, S. L., & Makous, W. (1981). Rod-cone interaction on large and small backgrounds. Vision Research, 21, 1181-1187.
29. Teller, D. Y., Mayer, D. L., Makous, W. L., & Allen, J. L. (1982). Do preferential looking techniques underestimate infant visual acuity? Vision Research, 22, 1017-1024.
30. Pulos, E., & Makous, W. (1982). Changes of visual sensitivity caused by on- and off-transients. Vision Res., 22, 879-887.
31. Buck, S. L., & Makous, W. (1982). Calibrating Maxwellian-view optical systems. Journal of the Optical Society of America, 72, 960-962.
32. Buck, S. L., Makous, W., & Piantanida, T. (1983). Background visibility and increment thresholds. Vision Research, 23, 1107-1113.
33. Mandler, M. B., & Makous, W. (1984). A three channel model of temporal frequency perception. Vision Research, 24, 1881-1887.
34. Makous, W. (1987). Changes of illumination, Night vision: Current research and future directions, (pp. 57--75). Washington: National Academy Press.
35. Makous, W. (1987). Overview, Night vision: Current research and future directions, (pp. 305-312). Washington: National Academy Press.
36. Chen, B., & Makous, W. (1989). Light capture by human cones. Journal of Physiology (London), 414, 89-109.
37. Makous, W. (1990). Absolute sensitivity. In R. F. Hess & K. Nordby (Eds.), Night vision: Basic, clinical and applied aspects, (pp. 146-176). Cambridge (England): Cambridge University Press.
38. Makous, W. (1990). Partitioning visual processes, Advances in photoreception: Proceedings of a symposium on frontiers in visual science, (pp. 78-102). Washington: National Academy Press.
39. MacLeod, D. I. A., Williams, D. R., & Makous, W. (1992). A visual nonlinearity fed by single cones. Vision Research, 32, 347-363.
40. Naiman, A., & Makous, W. (1992). Spatial non-linearities of grayscale CRT pixels. SPIE proceedings: Human vision, visual processing, and digital display III, 1666, 41-56.
41. Naiman, A., & Makous, W. (1993). Information transmission for sub-pixel edge positioning. Journal of the Society for Information Display, 1, 437-447.
42. Naiman, A., & Makous, W. (1993). Undetected gray strips displace perceived edges nonlinearly. Journal of the Optical Society of America A, 10, 794-803.
43. Chen, B., Makous, W., & Williams, D. R. (1993). Serial spatial filters in vision. Vision Research, 33, 413-27.
44. Yang, J., & Makous, W. (1994). Spatiotemporal separability in contrast sensitivity. Vision Research, 34, 2569-2575.

45. Yang, J., Qi, X., & Makous, W. (1995). Zero frequency masking and a model of contrast sensitivity, Vision Research, 35, 1965-1978.
46. Yang, J., & Makous, W. (1995). Modeling pedestal experiments with amplitude instead of contrast. Vision Research, 35, 1979-1989.
47. Yang, J., & Makous, W. (1997). Implicit masking constrained by spatial inhomogeneities. Vision Research, 37, 1917-1927.
48. Bex, P. J., & Makous, W. (1997). Radial motion looks faster. Vision Research, 37, 3399-3405.
49. Makous, W. L. (1997). Fourier models and the loci of adaptation. Journal of the Optical Society of America A, 14, 2323-2345.
50. Bex, P. J., Metha, A. B., & Makous, W. (1998). Psychophysical evidence for a functional hierarchy of motion processing mechanisms. Journal of the Optical Society of America A, 15, 769-776.
51. Makous, W. (1998). Optics and photometry. In R. H. S. Carpenter & J. G. Robson (Eds.), Vision research: a practical guide to laboratory methods, (pp. 1-49). Oxford (England): Oxford University Press.
52. Carney, T., Klein, S. A., Tyler, C. W., Silverstein, A. D., Beutter, B., Levi, D., Watson, A. B., Reeves, A. J., Norcia, A. M., Chen, C.-C., Makous, W., & Eckstein, M. P. (1999). The development of an image/threshold database for designing and testing human vision models. Proceedings of the SPIE: Human Vision and Electronic Imaging IV, 3644, 542-551.
53. Bex, P. J., Metha, A. B., & Makous, W. (1999). Enhanced motion aftereffect for complex motions. Vision Research, 39, 2229-38.
54. Carney, T., Tyler, C. W., Watson, A. B., Makous, W., Beutter, B., Chen, C.-C., Norcia, A. M., & Klein, S. A. (2000). Modelfest: year one results and plans for future years. Proceedings of the SPIE: Human Vision and Electronic Imaging V, 3959, 140-151.
55. Makous, W. (2000). Limits to our knowledge. Science, 287(5457), 1399.
56. Walkey, H. C., Barbur, J. L., Harlow, J. A., & Makous, W. (2001). Measurements of chromatic sensitivity in the mesopic range. Color Research and Application, 26, S36-S42.
57. O'Brien, H. L., Tetewsky, S. J., Avery, L. M., Cushman, L. A., Makous, W., & Duffy, C. J. (2001). Visual mechanisms of spatial disorientation in Alzheimer's disease. Cerebral Cortex, 11, 1083-1092.
58. Bex, P. J., & Makous, W. (2002). Spatial frequency, phase and the contrast of natural images. Journal of the Optical Society of America A, 19(6), 1096-1106.
59. Rainville, S. J. M., Scott-Samuel, N. E., & Makous, W. L. (2002). The spatial properties of opponent-motion normalization. Vision Research, 42(14), 1727-38.
60. Carney, T., Klein, S. A., Beutter, B., Norcia, A., Chen, C.-C., Tyler, C. W., Makous, W., Watson, A., Cropper, S. J., Popple, A. V., Robertson, K., Manahilov, V., Simpson, B., & Wenzel, K. (2002). Extending the modelfest image/threshold database into the spatio-temporal domain. Proceedings of the SPIE: Human Vision and Electronic Imaging VII, 4662, 138-148.
61. DeVries, S., Qi, X., Smith, R., Makous, W., & Sterling, P. (2002). Electrical coupling between mammalian cones. Current biology, 12, 1900-7.
62. BSR/HFES100: Human Factors Engineering of Computer Workstations; Standard for Trial Use. (2002). Santa Monica, California: Human Factors and Ergonomics Society.

63. Makous, W. (2003). Threshold and suprathreshold spatiotemporal contrast sensitivity. In R. G. Driggers (Ed.), Encyclopedia of Optical Engineering (pp. 2828-2850). New York: Marcel Dekker, Inc.
64. Fiser, J., Bex, P. J., & Makous, W. L. (2003). Contrast conservation in human vision. Vision Research, 43(25), 2637-2648.
65. Makous, W. (2004). Scotopic vision. In J. S. Werner & L. M. Chalupa (Eds.), The Visual Neurosciences (pp. 838-850). Boston: MIT Press.
66. Rainville, S. J. M., Makous, W. L., & Scott-Samuel, N. E. (2005). Opponent-motion mechanisms are self-normalizing. Vision Research, 45(9), 1115-1127.
67. Makous, W., Carroll, J., Wolfing, J. I., Lin, J., Christie, N., & Williams, D. R. (2006). Retinal microscotomas revealed with adaptive-optics microflashes. Investigative ophthalmology & visual science, 47, 4160-4167.
68. Makous, W. (2007). Comment on "Emergence of Novel Color Vision in Mice Engineered to Express a Human Cone Photopigment." Science, 318, 196b.
69. Makous, W., Kelly, E. F., Miller, M. E., & Silverstein, L. D. (2007). Visual displays, In. T. Albin (Ed.), Human factors engineering of computer workstations, Document #: ANSI/HFES 100-2007. Santa Monica: Human Factors and Ergonomics Society.
70. Li, R., Polat, U., Makous, W., and Bavelier, D. (2009). Enhancing the contrast sensitivity function through action video game training, Nature Neuroscience, 12, 549-51.
71. Makous, W. (2009). Afterimage 986. In E. Bruce Goldstein, Encyclopedia of perception, Thousand Oaks, CA: Sage Publications.
72. Makous, W. (2011) Biblical longevities: empirical data or fabricated numbers? Perspectives on Science and Christian Faith, 63(2), 116-29.

ABSTRACTS AND OTHER MINOR PUBLICATIONS

1. Makous, W. (1965). Directional sensitivity in a compound eye (No. 65-2224): Univ. Microfilms.
2. Makous, W. (1968). Transient Stiles-Crawford effect. J. of the Opt. Soc. of Am., 58, 727.
3. Makous, W., & Gould, J. D. (1968). Vision and lasers: An abstract. Psychonomic Science, 11, 358.
4. Woods, S., Hutton, R., & Makous, W. (1969). A neural influence over insulin release demonstrated by conditioned hypoglycemia. Diabetes, 18, 376.
5. Makous, W. (1969). Psychophysical assay of free 11-cis retinal. Journal of the Optical Society of America, 59, 509-510.
6. Makous, W. (1970). Conditioning in Limulus: Comment on Wasserman and Patton. Psychonomic Science, 19, 183.
7. Makous, W., Teller, D., & Boothe, R. (1970). Binocular interaction in the dark. Journal of the Optical Society of America, 60, 734.
8. Makous, W. (1972). Photopic suppression of scotopic sensitivity. Program of the annual meeting of the Association for Research in Vision and Ophthalmology.
9. Makous, W., & Schnapf, J. (1973). Two components of the Stiles-Crawford effect: Cone aperture and disarray. Program of the annual meeting of the Association for Research in Vision and Ophthalmology, 88.

10. Blick, D., & Makous, W. (1974). Single LGN-cells in macaque: integration of information at increment threshold. Program of the annual meeting of the Association for Research in Vision and Ophthalmology, 86.
11. Schnapf, J., & Makous, W. (1974). Individually adaptable optical channels in human retina. Program of the annual meeting of the Association for Research in Vision and Ophthalmology, 26.
12. Belgum, J., & Makous, W. (1975). Transient responses to shifts of angle of illumination. Program of the annual meeting of the Association for Research in Vision and Ophthalmology, 28.
13. Halter, J., Kulkosky, P., Woods, S., Makous, W., Chen, M., Porte, D., Jr. (1975). Afferent receptors, taste perception, and pancreatic endocrine function in man. Diabetes, 24 (Suppl. 2), 414.
14. Makous, W. (1977). Some functional properties of visual receptors and their optical implications. JOSA, 67, 1362.
15. Schnapf, J., & Makous, W. (1978). Light adaptation in the proximal retina. Investigative Ophthalmology, 17 (Suppl.), 171.
16. Makous, W., & Sanders, R. K. (1978). Fluctuations of relative sensitivity of opposite eyes during fusion. Journal of the Optical Society of America, 68, 1365.
17. Buck, S. L., & Makous, W. (1978). Notes on calibrating Maxwellian optical systems. Journal of the Optical Society of America, 68, 1392.
18. Buck, S. L., & Makous, W. (1978). Rod-cone interaction on large and small backgrounds. Investigative Ophthalmology, 17 (Suppl.), 153.
19. Buck, S. L., & Makous, W. (1979). Thresholds rise during Troxler fading. Investigative Ophthalmology, 18 (Suppl.), 252.
73. Buck, S. L., & Makous, W. (1978). Notes on calibrating Maxwellian optical systems. Journal of the Optical Society of America, 68, 1392.
20. Pulos, E., & Makous, W. (1979). Sensitization following offset of an annulus. Journal of the Optical Society of America, 69, 1452.
21. Buck, S. L., & Makous, W. (1979). Thresholds rise during Troxler fading. Investigative Ophthalmology, 18 (Suppl.), 252.
22. Pulos, E., & Makous, W. (1980,). Different effects of on- and off-transients. Paper presented at the Topical Meeting on Neural Advances in Vision (Optical Society of America).
23. Makous, W. (1981). On sensational texts. Contemporary Psychology, 26, 111-112.
24. Makous, W. (1981). Relating physiology to psychophysics: Current problems and approaches : Center for Visual Science.
25. Makous, W., & Pulos, E. (1981). Grating colors mix while their contours rival. Investigative Ophthalmology and Visual Science, 20 (Suppl.), 225.
26. Makous, W., Shamos, I., & Gleason, C. (1983). Positively accelerated transducer function. Investigative Ophthalmology and Visual Science, 24 (Suppl.), 187.
27. Makous, W. (1983). Review of Visual coding and adaptability. Journal of the Optical Society of America, 73, 968-969.
28. MacLeod, D. A. I., Williams, D. R., & Makous, W. (1985). Difference frequency gratings above the resolution limit. Investigative Ophthalmology and Visual Science, 26 (Suppl.), 11.
29. Makous, W., Williams, D. R., & MacLeod, D. A. I. (1985). Nonlinear transformation in human vision. Journal of the Optical Society of America A, 2, P80.

30. Cohn, T. E., & Makous, W. (1985). Detection and identification. Journal of the Optical Society of America A, 2, 1455.
31. Chen, B., & Makous, W. (1987). Retinal losses of contrast with oblique incidence. Investigative Ophthalmology and Visual Science, 28\(Suppl.), 357.
32. Makous, W., Pasternak, T., & Maunsell, J. (Eds.). (1988). New insights on visual cortex. Proceedings of the Sixteenth Symposium of the Center for Visual Science. Rochester, New York.
33. Chen, B., Makous, W., & Williams, D. R. (1988). Serial spatial filters in vision. Investigative Ophthalmology and Visual Science, 29 (Suppl.), 58.
34. Chen, B., Makous, W., & Williams, D. R. (1989). A nonlinearity localized in the outer plexiform layer. Investigative Ophthalmology and Visual Science, 30 (Suppl.), 52.
35. Larimer, J., Farrell, J., Glenn, W., & Makous, W. (1990). Applied vision. Journal of the Optical Society of America A, 7, 1939-40.
36. Chen, B., & Makous, W. (1990). Temporal modulation at high spatial frequencies. Investigative Ophthalmology and Visual Science, 31 (Suppl.), 2103.
37. Naiman, A., & Makous, W. (1990). Grayscale for edge positioning at sub-pixel resolution. Proceedings of the 43rd Annual Conference of the Society for Imaging Science and Technology, 189-190.
38. Naiman, A., & Makous, W. (1990). Undetected luminance steps displace edges. OSA Technical Digest Series, 15, 117.
39. Pelli, D. G., Makous, W., & Chen, B. (1991). On the optical resolution of rods. Investigative Ophthalmology and Visual Science, 32 (Suppl.), 698.
40. Naiman, A., & Makous, W. (1991). Information transmission for grayscale edges. Society for Information Display Digest, 22, 109-112.
41. Li, F., & Makous, W. (1991). Test of assumptions about cone thresholds. Investigative Ophthalmology and Visual Science, 32 (Suppl.), 1212.
42. Yang, J., Qi, X., & Makous, W. (1992). Visual channels and the zeroth order term. Investigative Ophthalmology and Visual Science, 33 (Suppl.), 1344.
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DISSERTATIONS DIRECTED

Berger, L. Visual adaptation in single units of *Macaca mulatta*. University of Washington, Doctoral Dissertation, 1969.

Woods, S. C. Mechanisms of conditioned insulin secretion. University of Washington, Doctoral Dissertation, 1970.

Blick, D. Response to near-threshold incremental flashes of single neurons in the macaque lateral geniculate nucleus. University of Washington, Doctoral Dissertation, 1973.

Belgum, J. Transient responses to shifts of angle of illumination in retinal neurons. University of Washington, Doctoral Dissertation, 1976.

Lai, H. Effects of ethanol on the nigro-striatal dopaminergic system. University of Washington, Doctoral Dissertation, 1977.

Raymond, J. E. Visual sensitization by a large flashed annulus. University of Washington, Master's Thesis, 1977.

Schnapf, J. L. Light adaptation in the distal retina. University of Washington, Doctoral Dissertation, 1978.

Sanders, R. K. Suppression during binocular rivalry and fusion. University of Washington, Doctoral Dissertation, 1980.

Pulos, E. Transient sensitization. University of Washington, Doctoral Dissertation, 1981.

Mandler, M. B. Discrimination and appearance of temporal luminance modulation at and above threshold. University of Rochester, Doctoral Dissertation, 1983.

Qi, X. Spatial summation and antagonism of foveal cone signals at different illuminances in the human retina. University of Rochester, Doctoral Dissertation, 1997.

POSTDOCTORAL FELLOWS

Steven L. Buck, 1976-79.
Maureen K. Powers, 1977-79.
Denise Varner, 1981-82.
Bing Chen, 1986-90.
Avi Naiman, 1990-93.
Jian Yang, 1991-95.
Peter J. Bex, 1995-97.
Stéphane J. M. Rainville, 2000-02.
József Fiser, 2000-03