

JOHN A. BRABYN, Ph.D.

Education

<u>Institution and Location:</u>	<u>Degree:</u>	<u>Year:</u>	<u>Field of Study:</u>
University of Canterbury, NZ	B.E.(Hons)	1974	Elec. Engineering
University of Canterbury, NZ	Ph.D.	1978	Elec. Engineering

Fields of Interest

Research and Development for blind, visually impaired, deaf, and multiply disabled individuals; transfer of technology to industry; human factors engineering.

Positions and Honors

Professional Experience:

1980-1981	Scientist, The Smith-Kettlewell Eye Research Institute, San Francisco.
1981-pres.	Senior Scientist, The Smith-Kettlewell Eye Research Institute.
1982-1994	Co-Director, Rehabilitation Engineering Research Center on Blindness & Low Vision, The Smith-Kettlewell Eye Research Institute.
1995-pres.	Director, Rehabilitation Engineering Research Center on Blindness & Low Vision, The Smith-Kettlewell Eye Research Institute.
2011-pres.	Executive Director, The Smith-Kettlewell Eye Research Institute.

Awards:

1972	Senior Scholar, University of Canterbury
1974	First Class Honours, University of Canterbury
1974-1978	University Grants Committee Scholarship, New Zealand
1988	William A. Kettlewell Chair Award in Vision Science
1997	Catherine D. Kettlewell Endowed Chair
2004	William A Kettlewell Chair Award in Vision Science
2004	Garland W. Clay Award, American Academy of Optometry
2006	AER Award for Outstanding Contributions to Low Vision Research & Literature

Memberships:

Member, Institute of Electrical and Electronic Engineers, 1979 to present.
Member, Association for Research in Vision and Ophthalmology (ARVO).
Founding Member, Rehabilitation Engineering Society of North America (Resna)_1979 to present.
Member, Association for Education and Rehabilitation of the Blind and Visually Impaired (AER).
Member, Low Vision Research Group (LVRG).
Member, International Society for Low Vision Rehabilitation Research (ISLRR).
Member, Engineering and Medicine and Biology Society, 1979 to present.

Member, Professional Service Group on Rehabilitation Engineering, Resna.

Examples of Professional Service:

Member, RESNA Government Affairs Committee, 2005 to 2012.

Associate Editor, IEEE Trans Neural Systems & Rehab Engineering, 2004-8.

Co-Chairman, Special Interest Group on Sensory Loss (expanded in 2010 to include Cognitive and Sensory Loss), Resna (Various times since 1986 and 2005 to 2011).

President, Coalition of Rehabilitation Engineering Research Organizations, 2002-present.

Founding Member, GSA Committee on Building Design for Low Vision, 2010.

Member, RESNA Standards Committee on Assistive Products for Persons with Vision and Hearing Impairments (ISO TAG Committee) 2005-2008.

Co-Organizer, National Eye Institute Workshop: Research Opportunities in Low Vision, 2002.

Member, National Research Council Committee on Disability Determination for Individuals with Visual Impairments, 2000-2002.

Member, Editorial Board, Assistive Technology, 2003-2012.

Member, Editorial Board, Journal of Rehabilitation Research and Development, 2000-2004.

Member, Low Vision Research Group, ARVO, 1997-present.

Member, National Research Council Committee: Currency Features for Visually Impaired, 1994.

Member, Veterans Administration RR&D Service Scientific Review Board, 1985-2002.

Associate Editor, IEEE Transactions on Rehabilitation Engineering, 1994-1996.

Chairman and member of various review panels for NIDRR, NSF, NIH, 1986-present.

Chairman, Small Business Innovative Research Study Section, National Eye Institute, 1986-1991, and periodically 1992-present.

Member, Advisory Committee, RERC on Universal Telecommunications Access, 1995-1999.

Co-Chairman, RESNA Conference, 1986.

Chairman, RESNA Special Interest Group on Sensory Aids, 1986.

Consulting Member, Mississippi State R&T Center Advisory Council, 1984-1990.

Examples of Research Grant Support

Rehabilitation Engineering Research Center grant (NIDILRR): PI from 1995 to present, Co-PI 1980-95. Throughout this period carried primary responsibility for leadership and administration of the Smith-Kettlewell Rehab Research operation and the generation of funding to support it.

Applied Visual Performance Tests (National Eye Institute): The "SKI Study" -- a major research grant on visual impairment in elderly people, 1992-2010. Generated pioneering information on the real world vision problems of elders.

Fundamental Issues in Wayfinding Technology (NIDRR): Explored problems in developing and evaluating travel assistance technology for blind and visually impaired people, including those with combined vision and hearing impairments. 2006-10.

Numerous other public and private grants, 1985-2010: Included many Small Business Innovative Research Grants, in collaboration with industry partners.

Selected Peer-Reviewed Publications (from over 125 total):

- Brabyn JA, Strelow ER. Computer-analyzed measures of characteristics of human locomotion and mobility. *Behavior Research Methods and Instrumentation* 1977; **9**: 456-62.
- Strelow ER, Brabyn JA. The use of foreground and background information in visually guided locomotion. *Perception* 1981; **10**: 191-8.
- Brabyn, J.A. Mobility aids for the blind. *Engineering in Medicine and Biology* 1982; **1**: 36-8.
- Brabyn JA. New developments in mobility and orientation aids for the blind. *IEEE Trans Biomed Eng.* 1982; **29**(4): 285-9.
- Strelow ER, Brabyn JA. Locomotion of the blind controlled by natural sound cues. *Perception* 1982; **11**: 635-40.
- Brabyn LA, Brabyn JA. An evaluation of "Talking Signs" for the blind. *Human Factors* 1983; **25**(1): 49-53.
- Brabyn JA. Introduction to engineering in the visual sciences. Guest editorial, *IEEE Engineering in Medicine and Biology Magazine* 1985; **4**(4): 11.
- Brabyn LA, Brabyn JA. A follow-up survey of prototype vocational aids for the blind. *Journal of Visual Impairment and Blindness* 1985; **79**(8): 354-5.
- Brabyn JA. A review of mobility aids and means of assessment. In: *Electronic Spatial Sensing for the Blind*, Warren DH, Strelow ER (eds.), NATO ASI Series, No. **99**, Martinus Nijhoff Publishers, Boston, 1985; 13-27.
- Brown B, Brabyn JA. Mobility and low vision: a review. *Clinical & Exper. Optometry* 1987; **70**(3): 96-101.
- Brabyn JA. Assistive devices for the blind and visually impaired. In: *Encyclopedia of Medical Devices and Instrumentation*. Webster J (ed.), Wiley & Sons, NY 1988; **1**: 425-38.
- Jampolsky A, Brabyn JA, Lewis A, Winderl M. Two experimental low vision aids. *Journal of Vision Rehabilitation* 1989; **3**: 33-7.
- Archambault P, Haegerstrom-Portnoy G, Jampolsky A, Colenbrander A, Brabyn JA. Reading performance in age-related maculopathy. *Invest. Ophthalmol. Vis. Sci.*, 1990; **31**(4): 416.
- Brabyn JA. Design considerations in sensory aids for the visually impaired. In: *IEEE Case Studies in Medical Instrument Design*. Nagle HT, Tompkins WJ (eds.), Institute of Electrical & Electronics Engineers, New York, NY 1991; 188-99.
- Brabyn JA. Problems to be overcome in high technology for the visually impaired. *Optometry and Vision Science* 1992; **69**(1): 42-5.
- Brabyn JA. The design of auditory instrument and computer displays for the blind. *SID 92 Digest*, 1992, 663-6.
- Brabyn JA, Colenbrander A, Winderl M. Improving the ergonomics of popular low vision telescopes. *Journal of Vision Rehabilitation* 1994; **8**: 12-3.
- Brabyn JA. Rehabilitation engineering research in blindness, visual impairment, and multisensory loss. *Technology and Disability* 1994; **3**(4): 266-82.
- Haegerstrom-Portnoy G, Brabyn JA, Schneck ME, Jampolsky A. The SKILL Card: An acuity test of reduced luminance and contrast. *Invest. Ophth. Vis. Sci.*, 1997; **38**(1): 207-18.
- Brabyn JA. Technology as a support system for orientation and mobility. *Am Rehabilitation* 1997; **23**(3): 26-30.
- Heller M, Brabyn JA. Ergonomic considerations in blind and low vision rehabilitation. In: *Perspectives in Rehabilitation Ergonomics*. Kumar S. (ed.), Taylor & Francis, 1997.
- Haegerstrom-Portnoy G, Schneck M, Brabyn JA. Seeing Into Old Age: Vision Function Beyond Acuity. *Optometry and Vision Science*, 1999; **76**(3): 141-58.

- Crandall W, Brabyn JA, Bentzen BL, Myers L. Remote infrared signage evaluation for transit stations and intersections. *J. Rehabil Res Dev.*, 1999; **36**(4): 341-55.
- Brabyn JA, Haegerstrom-Portnoy G, Schneck M, Lott L. Visual impairment in older people under everyday viewing conditions. *Journal of Visual Impairment and Blindness*, 2000; **77**(12): 653-62.
- Schneck ME, Haegerstrom-Portnoy G, Lott L, Brabyn JA. Ocular changes account for age related loss in coarse stereopsis. *Optometry and Vision Science*, 2000; **77**(10): 531-6.
- Arditi A, Brabyn JA. Signage and wayfinding. In: *Lighthouse Handbook on Vision Impairment and Vision Rehabilitation*, Silverstone et al. (eds.), Oxford University Press, 2000.
- Haegerstrom-Portnoy G, Schneck ME, Lott LA, Brabyn JA. The relation between visual acuity and other spatial vision measures. *Optometry and Vision Science* 2000; **77**(12): 653-62.
- Crandall W, Bentzen BL, Myers L, Brabyn JA. New orientation and accessibility option for persons with visual impairment: transportation applications for remote infrared audible signage. *Clinical and Experimental Optometry* 2001; **84**(3): 120-31.
- Brabyn JA, Schneck ME, Haegerstrom-Portnoy G, Lott LA. The Smith-Kettlewell Institute (SKI) Longitudinal Study of Vision Function and its Impact among the Elderly: an Overview. *Optometry and Vision Science* 2001; **78**(5): 264-9.
- Lott LA, Schneck ME, Haegerstrom-Portnoy G, Brabyn JA, Gildengorin GL, West CG. Reading performance in older adults with good acuity. *Optom and Vis Sci.* 2001; **78**(5): 316-24.
- West CG, Gildengorin G, Haegerstrom-Portnoy G, Schneck ME, Lott LA, Brabyn JA. Is vision function related to physical functional ability in older adults? *J Am Geriatr Soc.* 2002; **50**(1): 136-45.
- West CG, Gildengorin G, Haegerstrom-Portnoy G, Lott LA, Schneck ME, Brabyn JA. Vision and driving self-restriction in older adults. *J Am Geriatr Soc.* 2003; **51**(10): 1348-55.
- Brabyn JA, Schneck M, Haegerstrom-Portnoy G, and Lott L. Functional vision: 'Real World' impairment, examples from the SKI Study. *Visual Impair Res.* 2004; **6**(1): 35-44.
- Schneck, ME, Haegerstrom-Portnoy, G, Lott, LA, Brabyn, JA, Gildengorin, G. Low contrast vision function predicts subsequent acuity loss in an aged population: The SKI Study. *Vision Research* 2004; **44**: 2317-25.
- Brabyn JA, Ortman AJ, Palmer CV, Seelman KD. Sensory aids. In: *Encyclopedia of Biomedical Engineering*, John Wiley & Sons, NY 2005; (Invited chapter in press).
- Brabyn JA, Schneck ME, Haegerstrom-Portnoy G, Lott LA. Night driving self-restriction: Vision function and gender differences. *Optometry and Vision Sci.* 2005; **82**(8): 755-64.
- Lott LA, Haegerstrom-Portnoy G, Schneck ME, Brabyn JA. Face recognition in the elderly. *Optometry and Vision Science* 2005; **82**(10): 874-81.
- Seelman K, Brabyn JA, Ortman A, Palmer C. 2006. Sensory Aids. *Wiley Encyclopedia of Biomedical Engineering. An introduction to rehabilitation engineering.* RA Cooper H Ohnabe, DA Hobson (eds). 2007. CRC Press
- Brabyn JA, Schneck ME, Haegerstrom-Portnoy G, Lott LA. Dual sensory loss: overview of problems, visual assessment, and rehabilitation. *Trends Amplif.* 2007 Dec; **11**(4): 219-26.
- Brabyn J, Seelman KD, Panchang S. Aids for people who are blind or visually impaired. In: Seelman KD, Palmer CV, Ortman A, Mormer E, Guthrie O, Miele J, Brabyn J. *Quality-of-life technology for vision and hearing loss.* IEEE Eng Med Biol Mag. 2008 Mar-Apr; **27**(2): 40-55.
- Shen H, Chan KY, Coughlan J, Brabyn J. A mobile phone system to find crosswalks for visually

- impaired pedestrians. *Technol Disabil.* 2008 Oct 22; **20**(3): 217-24.
- Brabyn J. "Vision". In Lange M (Ed): *Fundamentals in Assistive Technology (4th Edition): An Introduction to Assistive Technology Implementation in the Lives of People with Disabilities.* Resna Press, Arlington VA, 2008; 293-311.
- Schneck ME, Haegerström-Portnoy G, Lott LA, Brabyn JA. Monocular vs. binocular measurement of spatial vision in elders. *Optom Vis Sci.* 2010 Aug; **87**(8): 526-31.
- Lott LA, Schneck ME, Haegerström-Portnoy G, Brabyn JA. Non-standard vision measures predict mortality in elders: the Smith-Kettlewell Institute (SKI) study. *Ophthalmic Epidemiol.* 2010 Aug; **17**(4): 242-50.
- Brabyn J. "Assistive Technologies for the Blind." In Goldstein, B (Ed): *Sage Encyclopedia of Perception.* Sage Publications, Thousand Oaks, CA, January 2010; 64-7.
- Brabyn J. "Sensory Rehabilitation." In Goldstein, B (Ed): *Sage Encyclopedia of Perception.* Sage Publications, Thousand Oaks, CA, January 2010; 881-3.
- Schneck ME, Lott LA, Haegerström-Portnoy G, Brabyn JA. Association between hearing and vision impairments in older adults. *Ophthalmic Physiol Opt.* 2012 Jan; **32**(1):45-52.
- Simon H, Gilden D, Brabyn J, Lotze A. Acoustic Cues Used by Blind Travelers. *Journal of the Acoustical Society of America*, **131** (4), 3516, 2012.
- Haegerström-Portnoy G, Schneck ME, Lott LA, Hewlett SE, Brabyn JA. Longitudinal increase in anisometropia in older adults. *Optom Vis Sci.* 2014 Jan; **91**(1):60-7.
- Schneck ME, Haegerström-Portnoy G, Lott LA, Brabyn JA. Comparison of panel D-15 tests in an older population. *Optom Vis Sci.* 2014 Mar; **91**(3):284-90.

Selected Abstracts, Presentations and Proceedings:

- Brabyn JA, Gerrey W, Fowle T, Alden A, Williams J. Some practical vocational aids for the blind. *Proc. IEEE/EMB 11th Annual International Conference*, Seattle, WA, Nov. 1989.
- Brabyn JA, Brown B. Mobility and low vision: Problem analysis using photographic methods. *Proceedings: Intern. Confer. Low Vision, Assoc. for the Blind*, Melbourne, AU. 1990.
- Brabyn JA, Steinman B, Haegerstrom-Portnoy G. Vision performance and accident rate in older drivers. *Proc.: National Conf. Driver Competency Assess.*, San Diego, Oct. 1990.
- Brabyn JA, Fowle T. The TeleBraille II: A braille TDD for the deaf-blind," *Proc. World Congress on Technology*, Arlington, VA, Dec. 1991; **5**: 764-84.
- Brabyn JA, Loughborough W. "A digitizing touch-tablet/synthetic speech computer interface. *Proceedings, Annual International Conference, IEEE Engineering in Medicine and Biology Society*, Orlando, FL, Oct/Nov 1991; **13**(4): 1833-4.
- Crandall WF, Gerrey WA, Brabyn JA. A fax-based reading system for the blind and print-handicapped. *Proc. RESNA Intl '92*, June 1992, Toronto, ON; **12**: 463-5.
- Williams J, Brabyn JA. A study of accessibility to electronic music synthesizers and sequencers by blind musicians. *Proceedings, RESNA '92*, June 1992, Toronto, Canada.
- Gerrey W, Brabyn JA, Fowle T, Alden A. The Smith-Kettlewell Auditory Breakout Box. *Proceedings, The Johns Hopkins National Search for Computing to Assist Persons with Disabilities*, Laurel, MD, Feb. 1992, 173-6.
- Schneck ME, Haegerstrom-Portnoy G, Katz B, Brabyn JA. Optic neuritis: Small reductions in luminance cause large losses in vision function. *Technical Digest, Non-Invasive Assessment of the Vision System, Optical Society of America*, 1993; **11**: 352-5.

- Brabyn JA, Schneck ME, Haegerstrom-Portnoy G, Steinman B. Vision Test Performance and Accident Proneness in Drivers Over the Age of 55. Proceedings: Vision Science and Its Applications Topical Meeting, *Optical Society of America*, 1994; **2**: 210-3.
- Brabyn JA, Haegerstrom-Portnoy G, Schneck ME, Hennessy D. Attentional Fields: Age Changes and Relation to Driving. *Invest Ophthalmol Vis Sci Suppl*. 1994; **35**: 1951.
- Brabyn JA. Orientation and Navigation Systems for the Blind: An Overview of Different Approaches. Keynote speaker, International Conference on Orientation and Navigation Systems for Blind Persons, London, England, Feb. 1995.
- Schneck M, Haegerstrom-Portnoy G, Brabyn J, Katz B. The SKILL Card in the optic neuritis treatment trial. *Topical Meet. Vision Science and Its Applic.*, Santa Fe, NM, Feb. 1997.
- Brabyn JA, Haegerstrom-Portnoy G, Schneck ME, Lott LA. The impact of cataract surgery on vision and reading in elders. *Invest Ophthalmol Vis Sci Suppl*. 42/4, S585, 2001.
- Brabyn JA, Alden A, Haegerstrom-Portnoy G, Schneck M. GPS performance for blind navigation in urban pedestrian settings. Vision 2002, Goteborg, Sweden, July 2002.
- Brabyn JA, Alden A. Use of GPS in urban settings. *Proceed.: RESNA Conference*, June 2002.
- Brabyn JA. Projects from the Smith-Kettlewell RERC on blindness and low vision. *RESNA News*, Spring 2002.
- Brabyn JA. Vision Changes in Aging: Importance to Low Vision Rehabilitation. Scotoma Training Program, American Academy of Ophthalmology, Anaheim, CA, Nov. 2003.
- Brabyn JA. Age-related vision deficits: Relation to sign reading and independent functioning. American Society on Aging Conference, San Francisco, CA, April 2004.
- Brabyn JA. Vision assessment: Relevance to dual sensory loss. Current practice and future needs. Invited presentation, Dual Sensory Loss Consensus Conference, Veterans Administration, Portland, OR, Sept. 2004.
- Brabyn JA, Haegerstrom-Portnoy G, Schneck ME, Lott LA. "Attentional" Visual Field Test Predicts Future Cognitive Performance ARVO Meeting Abstracts May 10, 2007 48:5501
- Schneck ME, Lott LA, Haegerstrom-Portnoy, Brabyn JA. Relation Between Vision Function and Retinal Characteristics Associated With AMD in Elders With Good Acuity ARVO Meeting Abstracts April 11, 2008, 49:4456
- Brabyn JA. Visual Display Reading Problems and Solutions. Envision Conference, San Antonio TX, September 2009.
- Brabyn, JA. Rehabilitation Engineering Research. What does it mean for Ophthalmology? Pacific Vision Foundation, San Francisco, CA, March 2, 2009.
- Lott LA, Schneck ME, Haegerstrom-Portnoy G, Hewlett S, Brabyn JA. Reading Performance in the Elderly: The SKI Vision Study ARVO Meeting Abstracts April 11, 2010 51:3057.
- Brabyn J. Seeing Beyond the ADA for Healthcare and Senior Living Environments. Special SGU Brown Bag Presentation, Smith Group Architects, San Francisco, May 13, 2010.
- Brabyn, J. A Lifetime of Mistakes in Assistive Technology. Keynote presentation at Workshop on Computer Vision Applications for the Blind and Visually Impaired, IEEE Conference on Computer Vision, San Francisco, June 14, 2010.
- Brabyn, J. Assistive Technology Development Problems: Lessons from a Career. (Panel organizer and presenter). Envision Conference, San Antonio, Tx, September 25, 2010.
- Brabyn JA. Some Vision Research Relevant to Built Environment Codes and Standards; at National Institute of Building Sciences and GSA Workshop on Improving Building Design for Persons with Low Vision, Sept 29-30, 2010.
- Brabyn JA. R&D on Technology for the Visually Impaired. Visiting Lecture, University of

Montreal, October 7, 2010.

- Brabyn JA, Co-Organizer, "Visual Function and its Management in mTBI". National Symposium, Smith-Kettlewell Eye Research Institute, San Francisco, March 4-5, 2011.
- Brabyn, JA. Binocular Vision Problems in mTBI. Report on a SKERI Symposium. Jampolsky Fellows Meeting, San Francisco, CA, March, 2011.
- Brabyn JA. Smith-Kettlewell Research Update, 39th Annual Jampolsky Fellows Meeting, Asilomar, CA, Aug 8-12, 2012.
- Brabyn JA. Moderator: New Approaches to Strabismus Management, International Strabismus Symposium, San Francisco, CA, Nov 8, 2012.
- Brabyn JA. Task Performance with Impaired Binocular Vision. XIX CLADE International Symposium on Strabismus, Rio de Janeiro, Brazil, April 17-20, 2013.
- Brabyn JA. Smith-Kettlewell Research Update, 39th Annual Jampolsky Fellows Meeting, Napa, CA, Oct 17-19, 2013.
- Brabyn JA. Smith-Kettlewell Research Update, 40th Annual Jampolsky Fellows Meeting, San Francisco, CA, Aug 21-24, 2014.
- Brabyn JA, Gildea D. Exhibits of Technology for Blindness and Low Vision, Resna Conference, annually 1979-2015.
- Brabyn JA. Vision and Rehabilitation Research at Smith-Kettlewell. Annual Jampolsky Day Guest Keynote Speaker, Pacific Vision Foundation, San Francisco, March 30, 2015.
- Brabyn J. Binocular Deficits in the SKI Study of Elder Vision. XX CLADE International Symposium, Punta Cana, Dominican Republic, April 29-May 2, 2015.
- Brabyn JA, Exhibit of Technology for Low Vision and Blindness. ADA 25th Anniversary Exhibit, Smithsonian Institution, Washington DC, July 2015.
- Brabyn JA. Research on Binocular Vision Problems in the Elderly, 41st Annual Jampolsky Fellows Meeting, San Francisco, CA, July 9-12, 2015.