

PROFILE

## Ian L Bailey

Leader in low vision and father of the LogMAR system

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Simply stated, Ian Laurence Bailey is a colourful character.

A curriculum vitae review of his professional life and the enormous impact he has had on optometry fails to illuminate those special qualities that have endeared him to his many friends and professional colleagues.

Ian has climbed and conquered many mountains; he is arguably the foremost international authority on the optics of low vision and he has been honored by receipt of the professional awards that he most respects (the Feinbloom Award, the Prentice Medal, the Glenn Fry Award and the Pisart Award). He obviously enjoys the respect of his international colleagues and the affection of the many colleagues he has mentored. You should also know that in the late 1950s, this man was a scruffy student who each day cycled to optometry school from the working class northern suburb of Coburg in Melbourne, Australia, and that he unrelentingly devoted the next 50 years to reciting limericks of dubious taste and telling colourful and off-colour jokes and outrageous stories. You should

also know that he is a wine connoisseur who has consumed literally thousands of gallons of good wine. He shows no sign of slackening in any of these activities.

### The formative years

Ian Bailey was a Coburg Public School malcontent who ambled into optometry with less than the usual notion of the practice of optometry but graduated distinctively after an active student life. He, Tony Adams, Don Mitchell and New Zealanders Peter Skeates and Stan Elwood were the first second-year optometry class under Barry Cole's tutelage. Barry Cole had just been appointed to the first full-time lectureship in the Victorian College of Optometry (VCO). He was later to be the Head of the Melbourne School of Optometry and the Foundation Professor of Optometry at The University of Melbourne. Ian correctly points to the fact that he, Ian Bailey, was '20 per cent of the class'. Barry Cole recalled this class well when he noted:

*'My first proper second year class included Ian Bailey and some other notables. I was excited by this talented group as they progressed through the course and could hardly wait for their graduation so they could begin contributing to the profession. Little did I (and those who shared my enthusiasm about this class) know how right we were. As it turned out, we had to wait while Adams, Bailey and Mitchell did postgraduate work and through my worst bits of bad management (among lots of bad calls) they all made their contributions in other countries.'*

Ian graduated in optometry in 1962. After a brief stint in optometric practice with Bruce Besley in Moonee Ponds, another working class suburb of Melbourne, Ian and wife Valerie made a trip to England. In England, he completed advanced contact lens and low vision studies while at City University. He managed to hit some mischievous high-spots with fellow VCO graduate Brien Holden, who was also to make his mark in optometry and is now Scientia Professor at The University of NSW.<sup>a</sup> On his way back to Australia, he joined Tony Adams at Indiana University (Tony was doing his PhD) and stayed on for a year doing a Masters of Science degree in physiological optics.

### The mover and shaker emerges

Ian was offered a lectureship in the VCO, which he took up in 1968. Once back in Australia, Ian resumed his professional life at the VCO, teaching and directing the clinic while maintaining an active clinical research program.

Ian's now long history of organisational contributions to the profession had their earliest beginnings in his service to the Australian Standards Association committees from 1968 to 1975 and his role as chair of the Southern Regional Congress in 1971. Importantly, as chair of the Victorian Division of the then Australian Optometrical Association, Ian's efforts to

a. A profile of Brien Holden is published in *Clin Exp Optom* 2001; 84: 366–371.

help usher in a revised optometry act of 1975 had a profound effect in positioning for the legislation that followed soon after, giving the profession rights to use diagnostic drugs.

In 1972, Ian became the first optometrist at the internationally renowned Kooyong Low Vision Clinic at the then Association for the Blind. Barry Cole and the then Professor of Ophthalmology, Gerard Crock, agreed to establish a low vision clinic, the first in Australia, in the rehabilitation centre of the Association for the Blind. Barry Cole returned from the meeting at which this agreement was reached and told Ian Bailey to set up the clinic. He did and did it well. It soon became a model low vision clinic that others sought to emulate.

His work in the new clinic with low vision patients kindled a life-long passion for advancing the rehabilitation of patients with vision impairment. That beginning was typical of the 'roll up your sleeves and get on with it' approach for which Ian is so well known. He took clinical equipment and magnifiers in a large box to a small room in an upstairs apartment at the Association for the Blind Day Centre each Tuesday. The box had been used to deliver a supply of paper tissues to the VCO. Ian proudly recounts how he started the Low Vision Clinic from a big tissue box. His experiences with those patients deeply affected his professional life and with typical Bailey humour he noted in one of his first patient record cards '... broke down and cried—she, not me!'

### Research in low vision

In 1974, Ian became the first Senior Research Officer of the National Vision Research Institute of Australia (NVRI). It was here that he toiled with colleague Jan Lovie in the design of the now well-known Bailey-Lovie logMAR chart. The Bailey-Lovie chart principles have been adopted as the gold standard for visual acuity testing. The chart is now required in all projects funded by the US National Eye Institute and the Food and Drug Administration, whenever visual acuity is an outcome measure. The design has been endorsed by the National Research Council



**Figure 1. Ian Bailey, Jan Lovie and the LogMAR chart. The photograph was taken in 1975, when Ian Bailey was Senior Research Officer in the National Vision Research Institute and Jan Lovie was his graduate student.**

Committee on Vision (US), the Concilium Ophthalmologicum Universale (Europe) and the International Standards Organisation. The chart is used in low vision clinics throughout the world. Ian's humour is evidenced when he routinely shows a slide of the chart to audiences all around the world (Figure 1).

The paper, published in 1976,<sup>b</sup> describing the design principles of the chart is the most widely cited paper in the history of the journal *Optometry and Vision Science*.<sup>c</sup> This paper introduced the logMAR units

b. Bailey IL, Lovie JE. New design principles for visual acuity letter charts. *Am J Optom Physiol Opt* 1976; 53: 740–745.

c. Bullimore MA. Editorial: Who's on first? *Optom Vis Sci* 2000; 77: 333–334.

and letter by letter scoring methods that are now used in visual acuity research throughout the world. Jan Lovie-Kitchin recalls those days at the NVRI and the Bailey character.

'In 1974, he received an NHMRC research fellowship to conduct low vision research. Ian was the first NVRI Research Fellow and I was the first NVRI postgraduate student. Ian gave up his position as Clinic Administrator of the (now) Melbourne Optometry Clinic to commence full-time research. He helped to negotiate a scholarship for me from the Association for the Blind, so that I returned from a stint in private practice to commence a Masters degree in 1974. When the building for the NVRI was completed in 1975, we moved our research from the department to the new laboratories. We went to set up and plug in our equipment and there was no power point on the whole length of the wall we wanted to use. There were lots of power points but all were down the other side of the laboratory. NVRI had bright green carpet which also went half way up the wall at the entrance and reception desk. Ian's vivid imagination and wicked sense of humour led to lots of fun with that. All photographs of the thick green carpet with lawn mowers and live sheep—from the Physiology Department—seem to have disappeared.'

### Ian heads for California

In 1976, after almost finalising a position at The University of New South Wales Optometry Department, Ian and Val were persuaded by Mert Flom and Monroe Hirsch (then Dean) to accept an appointment at the University of California Berkeley (UCB) School of Optometry to head the low vision teaching and research program. There, Ian has centred his professional and academic life for almost 30 years.

For more than one quarter of a century, Ian Bailey has lead the development of knowledge and the establishment of the scientific basis for the prescribing of low vision aids. He has been a prolific author and well over 100 of his 170 publications are on low vision topics. Many of his papers are classics that have become the most



**Figure 2.** Ian Bailey (left) and William Feinbloom at the American Academy of Optometry in 1986 during an event honouring William Feinbloom, who died soon after. Feinbloom signed the photograph, a fact of which Ian is most proud.

cited and important landmarks in our understanding of low vision and low vision care.

Not long after arriving in the USA, Ian became one of the first Diplomates in Low Vision in the American Academy of Optometry. In the years to follow, he played a key leadership role in the advancement of low vision and in the enhancement of the education of colleagues. He served in almost all of the leadership roles of that section of the academy, including vice-chair, chair and chief examiner for the low vision diplomate program. His expertise and scholarship in low vision were internationally recognised and in 1986, he became the inaugural Feinbloom Award Lecturer at the State University of New York. Ian probably looked to Feinbloom, more than any other colleague, as the pioneer of modern low vision practice. It is not surprising that this award and the subsequent receipt of the American Academy's William Feinbloom Award in 1994 are among the most treasured low vision based awards of his career. His photograph with William Feinbloom (Figure 2) has a promi-

nent place in his office. In 2002, his career in low vision was crowned by his receipt of the prestigious Pisart Award, given by Lighthouse International Foundation for the Blind (LHI) in New York. Ian is the only optometrist to receive this honour and it came with a large fellowship stipend, a trip to New York to meet the governing board of LHI and a public lecture.

### The clinician's researcher

Ian seeks simplification and practical advantage in his teaching and research. He abhors complexity that clouds basic principles and concepts. He has a long history of rigour in defining key elements and issues. The Bailey-Lovie charts, now internationally accepted or copied in an impressive number of formats, emphasised the fundamental principles, scattered in previous literature, for the sound and reliable assessment of visual acuity in normal and visually impaired groups. His work in low vision optics shows a persistent quest for simplifying concepts on one hand and on the other, there is a continuing search for deeper understanding. Take stand magnifiers, for

example. Before Bailey's work, the clinical community had little understanding of these devices and manufacturers' magnification ratings were accepted at face value. Bailey introduced new concepts and methods to define this fundamental optical attribute. Now the clinician can determine the location of the image relative to the lens and the image to object enlargement ratio. He did not stop there. He has always recognised the complexity of visual tasks beyond that involved in reading single letters on acuity charts. Clinical assessment of reading performance in low vision patients rests largely on the foundation laid by Bailey and his co-workers.

He has developed methods for clinically verifying the powers and magnification of low-vision telescopes and for setting the angle of spectacle-mounted telescopes. As is characteristic of Bailey's contributions, he provides not only the theory and quantitative methods for the application of optics to low-vision correction but he always provides practical approaches for clinicians to implement the principles in practice. For example, he has described the problems underlying back vertex power measurement of telescopes with a lensometer and outlined new methods for dealing with these problems.

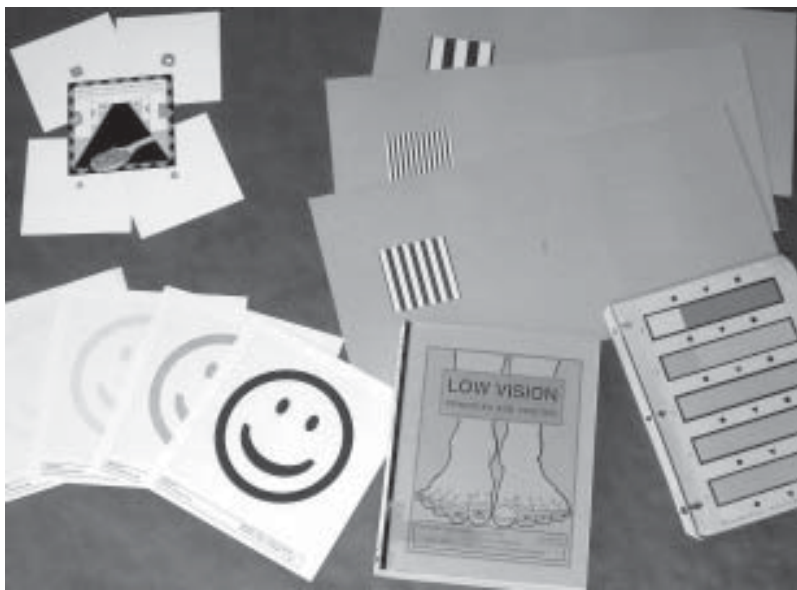
The first significant paper relating mobility to visual acuity, contrast sensitivity and visual fields was the 1982 paper from Marron and Bailey.<sup>d</sup> Undoubtedly, this is the most widely-cited paper in the scientific literature on vision and mobility. This paper surprised many when it showed that visual acuity is not a good predictor of mobility and that contrast sensitivity and visual fields are of much greater importance. It changed the way people think about vision and mobility. Today, most clinicians are aware of the fact, first shown by Bailey, that contrast sensitivity is a more fundamental predictor of not only mobility but many other important functional vision-related tasks.

In the area of contrast sensitivity, Ian

d. Marron JA, Bailey IL. Visual factors and orientation-mobility performance. *Am J Optom Physiol Opt* 1982; 59: 413-426.

Bailey is a well-known advocate of simplified clinical testing. He was probably the first to introduce the concept of contrast edge detection and low contrast visual acuity testing as clinical tools for measuring contrast sensitivity. In 1988, he continued this work by designing the 'Mr Happy' test of contrast sensitivity for children.<sup>e</sup> This test is routinely used at the UCB to establish contrast sensitivity in difficult-to-examine, multi-handicapped, visually impaired children and is frequently the only behavioural test that produces quantitative results in this population. Bailey's concept of using a stimulus relevant to children, a face, has since been adopted by others who develop tests for children. Other tests for use with children, developed by Bailey, include the Berkeley Cereal Test, a 'cheerio' (known as fruit loops in Australia) preferential looking test for assessing visual acuity in difficult-to-test children ranging in age from 18 months to three years. Each of these test formats reflects something of Ian's sense of humour; the cheerio test might have been named something else and the Mr Happy test reflects Ian's admiration for actor-comedian Robin Williams. These tests and the mischievous cover of a UCB School of Optometry low vision course taught by Bailey are shown in Figure 3. The reader surely gets the point.

In the 1990s, Ian Bailey turned his talents to the grading of lens opacities and retinal features in clinical practice and clinical research. He advocated using finer grading scales as opposed to the ubiquitous four-point approach. The adoption of finer and more carefully selected scale increments for clinical grading has profound implications for a clinician's ability to detect change in an individual patient and impacts the sample size in large-scale clinical trials. These principles are now being adopted by NIH-sponsored clinical trials and formed the basis of the LOCS



**Figure 3. Bailey developed a number of novel visual acuity and contrast sensitivity tests, many ahead of later commercial variants created by others. Shown here are the Children's Cereal Test and the Mr Happy test. Many show his mischievous sense of humour.**

system established for clinically grading cataract.<sup>f</sup>

It is not surprising that his many students and colleagues seek him for clinical wisdom and insight. Among those students are four who received their PhD degrees under Ian's mentorship, an additional three Masters degree students and literally dozens of low vision residents. Ian's lectures on the basic optics and magnification of telescopes for low vision patients are legendary at the UCB School of Optometry. All of his graduate students have subsequently made their own mark in optometric education. While most colleagues are familiar with his clinical and scientific contributions in the published literature, few will be aware of the very extensive list of government agencies, service organisations, vision standards entities, legal counsellors and corporate groups that have sought his

consultation, leadership and direction.

Among his accomplishments are his service to the leading national eye, vision and optometry entities of Australia and the USA. The Australian and US national associations have been served in multiple ways by his knowledge and wisdom. His beloved American Academy of Optometry has tapped him for numerous leadership and service roles, including the chairmanship of the International Admissions Committee, from which he recently stepped down. He took enormous pride in the many international candidates he nurtured and assisted to fellowship. He has actively participated in numerous academy committees, including membership, awards, admissions policies and standards, and provided leadership in academy sections. He is a member of the editorial board of the academy's journal, *Optometry and Vision Science*. The esteem with which the Academy holds him is evidenced by his record number of awards in the academy. Ian has not only received the William Feinbloom Award (1994) but also the Glen A Fry Award (1986) and most recently, the

e. Bailey IL. Optometric care for the multi-handicapped child. *Practical Optom* 1994; 5: 158-166. The Mr Happy test was first described by Bailey in an invited paper, Assessment of vision in handicapped children, given to the International Symposium on Blindness and Visual Impairment, Beverly Hills, 6 February 1988.

f. Chylack LT Jr, Wolfe JK, Singer D, Leske MC, Bullimore MA, Bailey IL, Friend J, McCarthy D, Wu SY and the LSC Study Group. The Lens Opacities Classification System, version III (LOCS III). *Arch Ophthalmol*, 1993; 111: 831-836.

academy's highest award, the Prentice Medal (2000). This truly reflects acknowledgement by peers for his research and advancement of low vision research. In the history of those receiving the Prentice Award, he is the only one who has received it based on contributions to low vision.

He represented the academy and the American Optometric Association for more than a decade (1984–1995) on the National Academy of Sciences (NAS) Committee on Vision. He also served in leadership roles for the National Board of Examiners in Optometry (NBEO), being among the pioneers in the development of the creative Patient Management Problems used in the NBEO examinations.

The federal, state and local governments have a long history of seeking his expertise as a consultant and committee member. This comes in addition to his service to international agencies, such as the Commission International de l'Éclairage on lighting needs for the partially sighted. Over the past two decades, he has given extensive service to the Federal National Institutes of Health, the National Eye Institute as a grant reviewer, and as an advisor to the Veterans Affairs Medical Centers on low vision care. He has also advised the Californian state government agencies on vision rehabilitation and police officer vision standards.

As a member of the NAS Committee on Vision, Ian was a significant contributor on issues of visual impairment, vision of the elderly and the appropriate assessment of vision in vocational and practical scenarios. Most recently, he served on a national committee of the US NAS National Research Council, which, after almost three years of activity and research, issued valuable guidelines for determining disability for individuals with visual impairment.<sup>g</sup>

Ian's research is an inspiration to those

who look for discoveries that enhance clinical practice and patient care. In reviews of his achievements, we find well-known referees describing his contributions with a sense of awe. For example, in his Pisart nomination one referee, Dr Arthur Jampolsky MD, Founder and Director of the Smith-Kettlewell Eye Research Institute and a dedicated clinical researcher in the field of blindness, low vision and rehabilitation, described his accomplishments as follows:

*'... [Bailey] has no peer in terms of the magnitude of contribution to clinical science and clinical practice in low vision ... He has changed clinical low vision from an art form to a scientifically based clinical procedure ... he has had no rival over the past 25 years.'*

Another internationally renowned ophthalmologist and researcher, Hugh Taylor, noted:

*'He [Bailey] is probably the most creative and imaginative optometrist in academic optometry ... the Bailey-Lovie visual acuity charts have become the standard for the measurement of visual acuity in all clinical trials or scientific studies in optometry and ophthalmology.'*

Colleagues at UCB School of Optometry have similar glowing accounts of his research. One reverently noted:

*'Professor Ian L Bailey has created an enduring body of work that will influence how visual function is measured and how low-vision devices are evaluated and prescribed far into this new century. His work in low-vision care is cited more frequently than any of his colleagues in the field. (See Low Vision—The Reference. A Bibliography of the Low Vision Literature, published by The Lighthouse, Inc, and containing over 6,000 citations.<sup>h</sup>) The clinical vision-science community owes him a great debt.'*

There are many stories told about Ian in such an affectionate and admiring fashion. Most of the stories are told with a sense of disbelief in Ian's occasionally outrageous and wicked sense of humour. Possibly, all of these stories are true. There can

be little doubt that, in their telling, they reflect great appreciation for a colleague who has mentored and inspired and who challenges us to seek a richer understanding of the essential principles that underlie the best of low vision care. Ian has been characterised by one of his students as an:

*'inspiring, imaginative and intuitive researcher—always questioning things, never accepting them until he understands them ... a very humble mentor, who didn't (and probably still doesn't) realise how much he has inspired others and just how admired he is.'*

In the past two years, he has embraced being a grandfather to Milo and Josie with the same enthusiasm and exuberance that so many of us witness in his professional interactions. In similar fashion, he repeats his wonderful stories about them with pure delight and satisfaction and without any consciousness of his repetition. We love him for it.

g. Lennie P, Van Hemel SB, eds. Visual Impairments: Determining Eligibility for Social Security Benefits (Committee on Disability Determination for Individuals with Visual Impairments); National Research Council, 2002. Available at URL: <http://www.nap.edu/catalog/10320.html>.

h. This database now has more than 10,000 entries and is freely available on-line through Lighthouse International at <http://www.visionconnection.org>. The database is endnote compatible.