The College of Optometrists in Vision Development presents...

OUR OPTOMETRIC HERITAGE

by: Albert A. Sutton, O.D., M.S., FCOVD
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Albert Sutton, O.D., M.S., FCOVD is a Fellow Emeritus member of COVD. Currently residing in Tamarac, Florida, he earned his Doctor of Optometry degree in 1949 from Northern Illinois College of Optometry (NICO) graduating Summa Cum Laude and was honored by Barry University in Miami, Florida with an M.S. in Exceptional Child Development.

Always seeking answers to “why is this happening” from early on in his career, he was selected to join the research clinic with Dr. Carl Shepard, during his last year at NICO. After graduation, he was asked to take over the V.T. department and replace Dr. Dick Apell who left for a position at the Gesell Institute.

Later, he established his own office in Pueblo, Colorado and started an OEP study group with his mentor, Dr. Carl Marsden of the famous Marsden Ball. He became Colorado’s OEP regional director, president of the Colorado Optometric Association, and served as president of the Colorado State Board of Examiners.

In 1955, he accepted a research fellowship at the Gesell Institute of Child Development. In 1968, he was invited to conduct a program in Florida, housed at Barry College, to help children with special needs. While at Barry, he served as a professor of Graduate Education in Child Development.
Through his involvement in research projects and monthly educational meetings, he was able to study with such pioneers of our optometric heritage as, Drs. A.M. Skeffington, G.N. Getman, Arnold Gesell and Darrell Boyd Harmon. He has also worked closely with others in the field of optometry and from many other disciplines. Yet, he considers the knowledge he obtained from OEP papers and the interactive discussions at OEP Study Groups as one of his greatest opportunities for learning.

Dr. Sutton has been involved in establishing cooperative research with neuroscientists in California, Florida and other parts of the U.S. linking the neuroscientific research of vision in brain function to clinical application. In order to facilitate this work and share what he has learned, Dr. Sutton lectures extensively in the U.S. and internationally.

For his service to children and adults, Dr. Sutton has received numerous awards. He was recognized in “Outstanding Educator of America” and “Child Development Professionals.” COVD honored him with the Skeffington Award for “Excellence in Optometric Writing” in 1989 and the G.N. Getman Award for “Excellence in Developmental Vision” in 1994. Most recently, he received the OEP President’s Award and was the first recipient of the Robert and Margery Wold Heritage Award in 2001.

Dr. Sutton has also authored several publications including “Building a Visual Space World,” “Children, Vision, Intelligence, and Creativity,” and “Hope for the Partially Sighted.”

Dr. Sutton has been writing the “Our Optometric Heritage” column in COVD’s VISIONS Newsletter since December of 1998. His unique perspective and years of experience have enabled him to enlighten many new generations of optometrists about the people, places and things that have marked significant milestones in the advancement of optometry through his column.

We, at COVD, are deeply grateful for all of Dr. Sutton’s time and efforts on behalf of “Our Optometric Heritage” and we look forward to his future contributions to this important record.

This volume is dedicated to all the pioneers of optometry, past, present and future, whose efforts enrich our heritage and contribute to the vision of us all.
Optometrists Use of the Retinoscope

During the last 100 years, Optometry has developed from a group of “spec fitters” to a functional profession that provides vision care for patients beginning at birth and throughout life. A great deal of credit for this growth is the role played by the retinoscope.

In the early 1900’s, the traveling itinerant optometrist carried with him his trial frame with trial lenses and his retinoscope which he used to examine patients and prescribe the needed lenses. His retinoscope was most important because it established a starting point to determine the refractive status. The information received from the retinoscopy was critical to the accuracy of the trial lenses put in the trial frame to reach the best Rx for the glasses he would prescribe.

The itinerant and jewelry store optometrists who were the most successful in providing glasses were those who were the most skillful with the retinoscope. Some of the Optometric Extension Program (OEP) pioneers learned their retinoscopic skills from their fathers who were jewelry store optometrists. Among them were Dr. Sol Lesser, Dr. G.N. Getman and his brother, and many others.

In the 1930’s and 1940’s, OEP optometrists reported that retinoscopy findings changed according to the posture of the patient. The changes were dependent on whether the patient was sitting, standing, bed ridden, or in other varied postures. As a result, these optometrists became more aware of whole body influences on vision. Dr. A.M. Skeffington influenced the growth of this awareness in his lectures. It became an important topic in the OEP Papers and was discussed in the study groups around the country. As a result, these optometrists became more and more aware of the need to increase their skill with the retinoscope.

In 1944, Dr. Arnold Gesell started his clinical research program on the development of vision at the Yale Clinic of Child Development. He had the support and guidance of OEP and of two optometrists, Drs. G.N. Getman and Vivian Ilg. Both of them were active in the study.

The book, *Vision: It’s Development in Infant and Child*, reports on this research. Evidence of changes in retinal reflexes indicating competence of the child in development is discussed on pages 174-175, specifically. The research showed that retinal reflexes of change in brightness, color and movement reflect the postures of the child. If the reflex is dull and colorless, it indicates a passive, supine posture. The brighter colored reflex indicates prone posture with more movement. Retinal reflexes are an external reflection of internal neurological and physiological functions.

As a result of Gesell’s study, the group that attended the annual Ohio State research meeting felt that there was a need for further study on the use of the retinoscope to obtain information on the functions of the mind and body. Involved in the study were Drs. Skeffington, Getman, Crow, Kraskin, Macdonald, myself and others.

Our first study was done with prisoners from the penitentiary and a professional polygraph examiner. We were able to detect the true or false responses of the subjects with our retinoscope more quickly than the responses were recorded on the polygraph machine.

Another test was done with the athletes of the Ohio State diving team. During planning practice, it is customary for the divers to imprint their dive in their mind’s eye through visualization. With our retinoscope we were able to follow the movements of the divers as they visualized them. These tests at the Ohio State meeting
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revealed that retinoscopic reflexes are important evidence of neurological changes in the whole body.

During the 1956 Mountain States Optometric Congress, Dr. Skeffington arranged a demonstration comparing retinoscopy to the polygraph test. The subject was connected to the polygraph with eyes fixating on a blank target. Mathematical problems were presented orally to the subject who was asked to solve them mentally. I performed the retinoscopy at the same time and hand gestured to the polygrapher to mark the graph with an up or down arrow to indicate the retinal reflex changes. The changes of the retina reflected the activity of the mental processing during the solving of the problem. The results indicated the retinal reflex responses were consistent, faster and more accurate than the polygraph skin responses.

“Truly, the eyes are the windows of the mind.”

A Crossroads of Clinical Practice

Optometry, in the late 1920’s, was at a crossroads of clinical practice. The bulk of the profession chose spectacles as the mainstay of their profession. But, a sizeable group was deeply committed to visual therapies. Many practitioners embraced a wide range of holistic and energetic approaches to vision care. In 1930, an optometrist named Jack Kurtz published a book entitled *Oculo-Physical Therapy for Optometry* which detailed optometry’s use of galvanism, diathermy biomagnetics, massage, psychotherapy, nutrition, homeopathy and light therapies to treat a wide range of functional and pathological conditions of the visual system. This total mind body approach to vision care was about to split with the rise of two of the greatest innovators in the history of optometry.

These great men were Dr. A.M. Skeffington and Dr. H.R. Spitler. In 1928, Skeffington embraced the neurological model, while Spitler developed a model based on biophysics. Skeffington’s neurological model of utilizing brain motivation to influence functions of the eyes to secure single binocular vision served as a foundation for the young and growing OEP Foundation. Both Spitler and Skeffington saw vision as a truly holistic paradigm. Skeffington saw changes in neurology function as a primary goal of treatment. Spitler, an M.D., as well as a physical therapist and optometrist, would do research to prove the main effect of light on physiology was through the eyes. He created the College of Syntonic Optometry in 1933 to provide education and research in phototherapy for optometry.

The term “syntonic” means to bring into balance. In this instance, it is the balance of the autonomic and endocrine nervous systems that will restore normal visual health and function and Spitler believed this can be accomplished by shining colored light into the eyes. Where Skeffington emphasized the power of lenses to alter the quality and distribution of light to alter vision, Spitler said it was the quantity and frequency that held a powerful effect on visual function.

Spitler viewed visual anomalies as symptoms of imbalances in the sympathetic-parasympathetic system which supports vision in such ways as: conditioned phorias, pupil responses, fluid pressure and secretions, accommodation and the effect of endocrine hormones on the strength of striped and smooth muscle, as well as visual field function. Imbalances, most often, were the result of head trauma, high fevers, ear infections, toxic conditions and stress. Spitler anatomically detailed the retinale-
hypothalamic pathway 50 years before any other scientist. Spitler used neurobiology to explain how colored light of specific frequency could rebalance physiology and thereby correct a wide range of visual conditions. Treatment consisted of the patient viewing different frequencies through an instrument called a syntonizer, which employed a combination of color derived from 11 different filter combinations. Treatment lasted for 20 minutes and usually was done for 20 sessions at a rate of 3 to 4 times a week. Therapy was monitored by measuring near kinetic fields, pupil reflexes, 21 point analytical and patient responses. These frequencies passed through the non-optic tract to reach the hypothalamus, thalamus, pituitary and pineal glad to create changes in the autonomies, endocrines, blood pH, nerve excitability, muscle tone, ionization, oxidation, oxygenation and biomagnetic polarity within and between cells. Balancing the autonomies also had a profound affect on the emotional well being of the patient. Spitler advocated improved visual and brain function through this biochemical and electromagnetic rebalancing. Thus, performance could be enhanced but without conscious effort and learning, so basic to behavioral approaches to visual therapy.

Syntonics was and is used as a stand-alone therapy or as an adjunct treatment to visual rehabilitation. Syntonic phototherapy is used to treat accommodative-convergence problems, amblyopia, strabismus, headache, degenerative eye disease, ocular-motor dysfunctions, brain injury, visual field defect, and attention and memory deficits. This is all facilitated by using colored light energy of selected portions of the visible spectrum. Spitler created ongoing education that has continued for 71 years. It was widely accepted in its early years with the College of Syntonic Optometry having more practitioners than any other vision therapy organization. But, Spitler’s brilliance and large ego were to clash mightily with competition and their individual egos. Their efforts were welcomed by the large population of holistic oriented optometrists. Most of the OEP optometrists, like Dr. Bob Kraskin’s father and Dr. Carl Marsden had syntonizers and used Syntonics as part of their regular VT programs.

With the advancements in neuro-quantum biology and energy medicine, we are seeing light therapies emerge in all fields of healing. This includes regulation of circadian rhythms for treating jet lag, color-puncture with coherent light replacing needles, strobic color assisted psychotherapy, red and infrared light for pain management

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Dr. Mary Jane Skeffington, Skeff’s wife, was an ophthalmologist who included Functional Optometry in her practice. Her office was a research facility for alternative approaches to vision care in cooperation with OEP and Skeff. After meeting with Dr. Spitler and evaluating syntonics for optometric use, Dr. Mary Jane reported that syntonics alone was too medical for optometry, but combined with optometric therapy, it provides additional benefits.

Drs. Skeffington and Spitler competed for broad acceptance in Optometry, but recognized the benefits of the other’s model. Their problem was circuit
and orthopedics, and behavioral medicine such as EEG. Phototherapy is being applied in dentistry, cardiology, endocrinology, clinical pathology, physical therapy and many body centered therapies. Throughout Europe and Russia, ophthalmology is using cold lasers to treat glaucoma, optic atrophy, macular degeneration and many anterior segment diseases.

Historically, color has been applied to the whole body through the skin. Spitler was the first to scientifically document that it was through the eyes that color had it’s most potent effects. Our entire blood supply courses through the retina every 80 minutes offering an ideal pathway to every cell in the body. After years of animal and clinical experimentation, Spitler developed the Syntonizer in the 1920’s. It incorporated a broad, white light source combined with 11 major filters to produce selected frequencies to treat a wide range of functional and pathological visual conditions. This instrument is still the most utilized color therapy device of our times.

Syntonics also adapted the campimeter to measure near visual fields as a functional measurement for both diagnosis and monitoring the efficacy of treatment. This includes kinetic measurement for form, color (green, red, blue), and the blind spot. The importance of these findings has been the defining nature of syntonic practice.

Since the 1970’s several new therapy instruments have been developed utilizing brighter light sources, flicker and narrow band filters to enhance clinical outcomes. These include the Lumitron by John Downing, the Color Receptivity Therapy by Jacob Lieberman, the Spectral Illuminator by Franek Olstowski and John Searfoss’s Light Training Instrument. Various home color units have been produced by Drs. Fox, Levine and Hancock and are widely used to support in office vision therapy.

The use of tints and filters, such as Irlen Lenses, have met with varying success to restore timing between the Magno-Parvo cellular pathways so crucial to visual information processing. The tendency to habituate to these tints limits their long-term efficacy. Habituation is not an issue in Syntonics as treatment is done gradually over a 4 to 5 week span and allows the neurological system to rebalance itself.

Balance of the biological, physiological, electro-magnetic systems creates the supportive milieu to allow improved visual function that can be the starting point of visual rehabilitation using lenses and traditional therapy approaches. This speeds up visual therapy and enhances the outcome. We can meet our environment with continued growth and vigor. The individual’s psychophysical makeup is balanced with their neurobiology, a foundation for health. Vision being the most energetic system in our being will function best when a truly holistic balance is achieved.

Both Dr. Skeffington’s neurological model of vision as the foundation for development of vision and Dr. Spitler’s neurobiological model for the care of vision have withstood the tests of time. Optometry has been a leader in phototherapy and vision development for over 70 years. The need for a holistic, total mind-body approach is now being accepted as the most effective form of care. Dr. Skeffington and Dr. Spitler have been pioneers in this approach. It is now up to us to continue to integrate and build upon our heritage!

“Spitler was the first to scientifically document that it was through the eyes that color had it’s most potent effects.”
The Formation of the Optometric Extension Program

In our optometric heritage, the greatest boon in the development of knowledge came as a result of Optometry’s relationships with other disciplines. Many of these relationships came as a result of “arranged conditions” established by our OEP leaders.

Dr. E.B. Alexander was an Oklahoma optometrist who formed study groups in his state. Because of their success, he decided to extend them to other areas. In 1924, he invited Dr. A.M. Skeffington to speak at a study group meeting in Denver, Colorado. This was the first time that Skeff was on a platform and he made quite an impression, not only because of his knowledge but also because of his typical white attire.

This photo of Drs Alexander and Skeffington was taken at the 30th anniversary of that first meeting. That Anniversary celebrated the team that formed the Optometric Extension Program, (OEP).

Alex was the optometrist with oil wells. He was the organizer, planner and financier for OEP. Skeff was the educator, researcher and developer. Together they developed an effective program of study groups. Monthly education papers were sent to the groups for study and discussion and Annual Congresses were held, not only to hear speakers and exchange knowledge, but also to bring OEP members together to form a close knit optometric family.

Skeff dedicated a lifetime in search of a deeper understanding of vision. He was an avid reader of scientific publications, both national and international. He and his wife, Mary Jane, (an Ophthalmologist) spent part of a year in Austria meeting with neuroscientific researchers in vision. Skeff’s book, Differential Diagnosis in Ocular Examination was published in 1931. He had the deep insight to understand the neurology of vision as expressed in a paragraph of the introduction to the book (Page IX):

“Every phase of thought here presented is considered entirely from the neurological viewpoint. It is necessary that the Refractionist understand that his work has its bearing, not on the eye itself, as an optical instrument, but entirely on the motivation from the brain, utilizing the functions of the eye to secure single binocular vision to the individual with a maximum of comfort and a minimum expenditure of energy and disturbance in the central nervous system.”

Skeff’s dedicated search led him to the five year study with Dr. Gesell at the Yale Clinic of Child Development, to the years at Ohio State with Dr. Sam Renshaw and the neuroscientists, to the years with Dr. Darrell Boyd Harmon and to many of the other neuroscientists dedicated to the exploration of vision.

During Skeff’s years on the circuit, he continued to read neuroscientific publications and then made a point of visiting the author to learn more. Skeff’s visits were exchanges of concepts that usually resulted in cooperative studies with many disciplines. The knowledge he gained was then presented at the congresses and in the OEP papers. In addition he invited many of the scientists to share the platform so optometrists could gain...
the knowledge first hand. In addition to the various Congresses, he arranged speakers and organized meetings at Ohio State, The Gesell Institute, the Harmon Research Center, and Learning Disabilities Foundation.

He revealed that the application of lenses influenced behavior and whole body posture beyond the results of ocular fitting. He strove to give optometrists the knowledge that would give them foundations to better understand the patient’s problems and give to

The Formation of the Optometric Extension Program (continued)

Dr. E.B. Alexander, the developer of the Optometric Extension Program, was President of the Board and served as administrator-consultant. Dr. A.M. Skeffington served as the educator, scientist, and synthesizer. Skeff presented the thinking of the leaders within Optometry, as well as, from related disciplines. He brought people together, inspired them at meetings and guided their development into roles as researchers, speakers and writers in optometry integrating the information received through the interrelationship of psychology, neurology, education, child development and many other disciplines. But, it was Alex who, in consultation with Skeff and the OEP Board, developed the overall plans and the integration of the growth and development of programs.

To spread the growth of Optometry, Alex organized study groups in Oklahoma and surrounding states. In 1924, he organized the first inter-state Optometric meeting in Denver, Colorado, where the AOA president was scheduled to speak. But when he became ill, Skeff stepped in as a replacement.

In 1928, Alex legally organized OEP as an educational facility. He arranged for meetings across the country to organize and educate Optometrists. As vice-president of AOA, he arranged for OEP to become the education department of the AOA. He was instrumental in the court case to prevent the Bureau of Medical Licensure from controlling Optometry.

Alex and Skeff planned for Skeff to expand Optometry’s horizons by building two way bridges to the scientific thinking of Harmon, Renshaw, Gesell, Halstead, Strauss, Kephart, Pronko, Walter, Bartlett, Shipman and numerous others. All these great thinkers participated at OEP congresses and other OEP meetings resulting in expanded thinking by the optometrists. Gradually, as the scientists remained at the meetings and were exposed, more and more, to the “Optometric Philosophy”, they learned that they, in turn, were learning from Optometry. As a result, these great thinkers served as spokespersons to other disciplines, organizations and to the public. And the two way bridges became a reality.

Dr. Alexander organized many interrelated meetings including the annual
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Ohio State Scientist meetings, as well as, meetings at Purdue University, Gesell Institute and many others. These research meetings with scientists continued for many years and Optometry was always included. The public education and public relations were tremendous. The thinking of the scientists and Optometry was functional, giving Optometry a scientific basis. As a result, Alex did not have to buy media public relations directly. The scientific community and the public praised the work of Optometry in their publications.

All this led to optometrists serving on boards of directors of the Learning Disabilities Foundation and other related professional organizations. They were invited to work with schools and educational institutions. This momentum, which lasted about 30 plus years, expanded Optometry’s thinking, expanded OEP membership, increased optometrists’ participation in children’s visual care and elevated the opinion of the public and professionals that Optometry was, and is, a unique profession.

In the late 1970’s, Optometry schools in the U.S. introduced the medical teaching of eye care so optometrists could participate, financially, in managed care practices. The very thing that had expanded the popularity of our profession, functional, developmental and behavioral teaching, was reduced and became a lesser part of Optometric training.

Also in the 1970’s, Drs. Alexander and Skeffington were forced, because of age and health, to reduce their activities. Dr. Homer Henderickson assisted Dr. Alex. Dr. Jerry Getman assisted Skeff. And Drs. Bruce Wolf, Larry McDonald, Bob Kraskin, myself and many others continued to provide post-graduate education in functional, developmental and behavioral optometry to optometrists. But the “two way bridges” to the scientists gradually waned.

Visual Training Beginnings

In 1928, the Optometric Extension Program became an independent organization with 51 members from around the country. One of those 51 members was a young Southern Californian named Dr. George Crow who became the acknowledged “father” of today’s concept of visual training.

Dr. Crow proposed that a key to system and order in vision training would be found in the fields of experimental and physiological psychology. After much study, he revised his original thinking in visual training and, as he stated, “For the first time there came rhyme, reason and orderliness in method and sequence in instrumentation.”

The Optometric Extension Program published the original 13 papers, “Fundamental Principles of Orthoptics,” October 1937 to February 1939, co-authored by Crow and Fuog. The Papers covered the new philosophy and approach in visual training.

From the stimulus provided by this new viewpoint came developments in visual training and lens application which prepared optometry for an opportunity provided by World War II. The December 1941, declaration of war launched the mobilization of optometry to aid in the war effort. Thousands of men who were rejected by armed forces examiners gained, through visual training, the acuity and visual skills necessary for military acceptance. This aided in greater utilization of manpower which was so crucial at the time.

Also in the 1930’s, Dr. Skeffington cultivated Professor Samuel Renshaw, head of the Department of Experimental
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Psychology at Ohio State University, to work with OEP. Renshaw’s research produced two phrases that altered the course of optometry:

1. Seeing is motor and manipulatory.
2. Seeing is learning.

These phrases led to the development of tachistoscopic training, a learning process, for aircraft and battleship recognition giving aviators the ability to identify aircraft and battleships in a split second. This was a very important contribution to the war effort. As a result, tachistoscopic training continues to be an important optometric visual training procedure.

Pioneering Vision Care with Dr. Carl Marsden

In the early years of Optometry, as it was becoming a unique profession for vision care, many optometrists were in jewelry stores or were itinerant clinicians carrying trial cases and trial frames as they traveled from community to community to help those in need of their care.

One of those pioneers was Dr. Carl D. Marsden, creator of the Marsden Ball procedures. My first introduction to Dr. Marsden was when he had an office on the mezzanine floor of Fisher Jewelry in Pueblo, Colorado. One of his visual training procedures was to hang a white ball from the ceiling over the banister of the mezzanine. He had his patients view the ball and the jewelry counters below.

At our two man (Dr. Marsden and I) monthly study group meetings, we reviewed the OEP papers. Later, this study group expanded to include many others with searching minds. In his soft spoken, modest manner, he interpreted the 21 point examination findings in terms of daily behaviors, in addition to the ocular responses. Dr. Marsden was an excellent observer, with a keen insight and understanding of a patient’s posture, voice and visual processing during an examination and visual training.

In 1952, Dr. Marsden moved his practice to Rocky Ford, Colorado, a rural community with wide open visual space. His visual training programs, especially for myopic patients, involved lenses and prisms which the patient wore while riding horseback and/or doing roping activities. The standard program for all myopic patients was to have a summer job on a ranch in wide open spaces. They wore special lenses and were assigned various space activities in addition to their work.

Dr. Marsden’s utilization of lenses was unique. When the analytical visual analysis findings revealed constricted visual ranges and plus acceptance was unavailable, he decided that the lens should act as visual training. He used a very low prescription lens which he called a “wedge” lens. Using this “wedge” lens, he was able to begin to open space in the constricted ranges. Even though the findings did not show it, he prescribed plano –.25 X 180 or plano - .25 X 90, with a tint of either Cruxite Ax or Therminon, depending on his observations. He felt that color therapy was an important part of visual care.

These “wedge” lenses were applied slowly and gradually until the patient felt comfortable and could wear the lenses continuously, with comfort. This adaptation was an indication of some range expansion. The progress evaluation findings and the patient’s reports of “feelings” were important for the next step. This approach was successful for Dr. Marsden’s patients, and following his guidance, it has been successful with our patients for many years.

As with many of the pioneer optometrists who were holistic in their approach, Dr. Marsden utilized vitamins and minerals as part of his own health care as well as the...
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health of his patients. He guided his patients toward their use to enhance vision. When he started to develop cataracts, he requested that I examine him to monitor changes in his cataracts. Through his personal program of vitamins and minerals, he was successful in reducing the cataract formation and improving his vision for years.

Currently, Optometry remembers him as the creator of the Marsden Ball procedures. But, he was important to Optometry in other ways. During his life, Dr. Carl D. Marsden served as a very important member of the Mountain States Congress Committee. He was a contributor to the OEP literature which was used by the study groups. I will always

“The Four F’s – Focus, Fixation, Flexibility, and Fusion.”

Often, Dr. Louis Jaques used the phrase, “The esophoria of youth is the exophoria of age.” In accommodation-vergence language, this concept explains that continued use of negative fusion vergence to compensate for esophoria, in time, will lead to the development of exophoria. From their research and experience, Dr. Jaques and many of his colleagues concluded that the development of abnormal phorias and imbalanced ductions were “only symptoms” of a problem and not the cause of the problem. As a result, Dr. Jaques did not believe fusional vergence therapy was necessary because the abnormal phorias and vergence would normalize in time if the cause was resolved.

He felt that if basic therapies are performed properly and if near point plus is prescribed as needed, these actions will take care of the underlying cause of the problem without therapies for the symptoms. His therapy philosophy was the “four F’s – Focus, Fixation, Flexibility, and Fusion.”

Dr. Jaques was very aware of looking for “the anatomically vertical misaligned orbit” which could create interference in binocularity. He used prolonged occlusion to derive the true deviation beyond the habitually developed compensation. This is an example of observation, insight and understanding in patient care.

Toward the end of his career when he was into his nineties, Dr. Jaques promoted binasal occlusion as home therapy for all patients with binocular problems. Appropriate placement of the binasal occluders was a key factor in the therapy of a patient’s individual needs.

Dr. Louis Jaques was exemplary of many of our optometric pioneers. He was a good observer and studied the gestalt of his patients. He did not use therapy to treat their symptoms, rather Dr. Jaques used therapy to guide his patients into resolving the cause of their problems.
Expanding Optometry’s Horizons

In the early 1940’s, Darell Boyd Harmon, Ph.D., was consultant to the Texas Department of Education. His research reports showed that the posture of students at their desks in the public school classrooms affected more than their ability to learn. Improper posture resulted in dental problems, body warps and visual problems.

Dr. A.M. Skeffington’s greatest contribution to our profession was expanding optometry’s horizons by building bridges to other disciplines. Dr. Harmon’s report to the Texas Department of Education triggered a close relationship with Dr. Skeffington and led to many years of optometric research studies.

One of the major contributions was the study of how lenses affect pulse, respiration, heartbeat and learning. The teenage son of the chairman of the Texas Education Department, a high school student, was the subject of the study. The student was wired to the best equipment available at the time, that could measure pulse, respiration and heartbeat. In addition, a movie camera (before video) was used to film his changes of body posture and facial expressions. An audio recorder was used to capture his voice expressions, timing, pauses and hesitations during his reading.

A series of different lenses was applied as the student read printed material at his grade level. For this student, the most effective visual processing was with a +.62 sphere. This research film, now in video form, is in the library of Dr. Robert Kraskin.

Dr. Skeffington and the OEP, beginning as early as the 1930’s, had stated that optometry’s unique application of lenses was holistic beyond the typical optical characteristics of lenses. Dr. Harmon’s research with lenses supplied the evidence that confirmed this statement. Several of us who were enthused with the evidence presented by the presentations of Drs. Harmon and Skeffington were prompted to use monitoring and recording equipment in our offices during our visual examinations of patients. This helped us in providing more effective lens applications for our patients. Following their guidance, we also learned the importance of good observations of behavior, including awareness of changes in a patient’s voice pitch and tempo, as well as, body posture and movements which made the quantitative responses more meaningful.

Despite all the evidence presented by Dr. Harmon, there were those who set out to disprove his theories. One was Dr. Jack Pierce whose research lens study was started for that purpose. However, his study resulted in conclusions that actually confirmed Dr. Harmon’s evidence that lenses could change body posture, internal body responses and visual processing efficiency beyond the ocular changes.

With the modern technology available today, a similar study, based on the original Harmon research study, could reveal results of the effect of lenses on body functions, learning and behavior which could be most exciting. Another research study of this type could open many avenues which would be a stimulus to Behavioral Optometry. The publication of the results would educate other disciplines and the public of the need for effective lens application to improve visual processing and learning.

Dr. Darell Boyd Harmon’s study confirmed the potential of optometry’s unique application of lenses for learning and behavior. Today the need is even greater than it was 50 years ago!

“Dr. Harmon’s research with lenses supplied the evidence which confirmed optometry’s unique application of lenses was holistic beyond the typical optical characteristics of...
Darell Boyd Harmon’s Contributions to Learning

“Function alters structure and structure alters function....The environment and demands are important factors in daily living and learning.”

During his research of vision, one of the many factors Dr. Harmon explored was the use of lenses and their relationship to posture. His research film on lenses demonstrated that +.62 spherical lenses on a high school subject during a reading activity produced minimum stress as measured by pulse, respiration and heartbeat. But, it also demonstrated that, for that student, increases beyond +.62 spherical lenses created a continuous increase in levels of stress beyond the “no lens” period. The film and script also showed that body posture changes with the change of lenses.

During his seminars, Dr. Harmon also emphasized that being a good observer was as important as the use of the appropriate application of lenses for visual processing of information beyond visual acuity. He could observe a worker at a task 20 feet away and give us the prescription of the glasses worn by the worker. In the 1940’s and 1950’s, many optometrists, enthused with the benefits of plus lenses, over-prescribed them leading to additional stress. In many cases, this resulted in increased myopia and other compensations created by the added stress.

For most efficient learning, Dr. Harmon emphasized posture, distance and lighting. In the publication, Coordinated Classroom, from the American Seating Company, he presented the evidence and procedures for most efficient learning. The Harmon desk, manufactured by the American Seating Company, had the reading and/or writing surface at a 20 degree angle with a variable seat adjustable to proper heights, so feet could be flat on the floor to provide good support of posture. The distance of the seat to the reading and/or writing surface could be adjusted to permit the learner to maintain the proper (Harmon) distance, measured from the middle knuckle of the fist to the elbow. To provide the most efficient distance for the learner to maintain, measure from the eyes to the reading and/or writing material on the 20 degree desk slope. This Harmon distance, as described, should form an equilateral triangle from the shoulders to the elbows held at body sides, the forearms held at a 20 degree slope, and the two hands together at a distance from the eyes to form the last leg of the equilateral triangle. These distances will change as the body of the learner grows.

As a protection against an atomic attack by Russia, the idea of underground schools developed. An experimental school, without windows, was built in New Mexico. Dr. Harmon was asked to participate in this program because of his knowledge of lighting and color and their effect on learning. He demonstrated efficient lighting for stress-free learning. Practicing in Colorado, Dr. Carl Marsden and I were close enough to be involved in the project and to watch its progress.

Because there was no sunlight, the color of the lighting and the color of the room surfaces (paint, wallpaper, etc.) were very important. For example, color of the light for a near visual task should not be in the blue or glue-green range. Color temperature of light presents characteristics of plus and minus lenses. Therefore, use of an appropriate plus lens may be supported or reduced by the lighting environment.

As consultant to our “Learning Disabilities Foundation” at Barry College in...
the 1960’s –1970’s, Dr. Harmon applied his research to our study and work with children who had learning disabilities. Not only did he guide us in the use of proper lighting and environment, but he also included biochemistry support.

Today, many optometrists are applying the concepts and support of posture, distance and lighting knowledge as presented by Dr. Harmon. Twenty degree posture boards, Harmon distance measurements, proper lighting and “appropriate” lens application for children and adults to enhance visual processing for learning according to his concepts are being used.

“Function alters structure” results in compensations of myopia, astigmatism and other manifestations. But, these can be prevented by arranging appropriate stress-reducing conditions for learning tasks.

The profession of Optometry, Education and Environmental Design will be forever grateful to Dr. Darell Boyd Harmon for his many contributions to learning.

The Influence of Scientific Research on Optometry

Curiosity regarding the changes in Optometry over the years is one of many questions I have received from time to time. In my estimation, the important contributions of scientists and their research, has been extremely influential in altering the face of Optometry over the years. Many of the concepts and clinical applications we use today have resulted from such contributions and have provided Behavioral Optometry with a broader, more comprehensive service.

A major contributor was Darell Boyd Harmon, Ph.D. who, in February 1930, submitted a paper at N.Y.U. presenting his first study on restraints of performance adversely affecting learning and perception. While conducting research on schools at the University in San Antonio he met Dr. Nelson Greeman who introduced him to Optometric thinking. Dr. Greeman explained that “good visual service for rehabilitation and enhancement of vision was considered more than the fitting of prosthetics.”

That exposure led Dr. Harmon to Dr. Sol Lesser, a leading Dallas Optometrist. Together they designed performance stress studies of Texas school children. Their report of that study was presented at the 1930 OEP Congress. At that Congress, Dr. Harmon was introduced to Dr. Skeffington who, at that time, was teaching optometrists that visual problems were more than the product of ocular anomalies and were actually derived from inadequacies of total performance. Skeff’s favorite quotation by C. Judson Herrick summarized the unity of the organism, “I am a minding body,” a quote that became the basis of OEP philosophy.

That Skeffington-Harmon introduction resulted in a long, productive dialogue that contributed to the development of many Optometric concepts.

Dr. Harmon’s many research studies provided data showing that “poorly functioning body mechanics enters into the causation of at least 65% of the hyperphores and 75% of the anisometropes and astigmats.” Other studies presented evidence that postural components were causing problems of myopia and hyperopia.

He reported that researchers, too numerous to mention, have shown that visual orientation-our awareness of where we are in space and time-is derived from the functioning of our gravitational reflexes. The more accurately our reflexes maintain anti-gravity verticality (orientation), the more accurately our “foveal axis” and resulting accommodation and localization function in our visual space.

The trunk-neck-ocular feedback relationship sets the tonic state of the motor
mechanisms of accommodation, convergence, or both. Hypertonic tense-held trunks or necks result in excessive feedback and gain to ocular mechanisms thereby transposing space toward the individual (esophoria).

Hypotonic functioning of neck or trunk, with reduced feedback and gain at the eyes, moves space away from the individual (exophoria). Asymmetric or unequal bilateral body or neck tonus leads to differences of functioning between the two eyes and to rotations of the planes of regard in space.

Medial tilts of the head, forward or backward, accompanied by a superior or inferior convergence result in intorsions or extorsions. This can lead to visual disabilities, especially when tilts occur in sustained near tasks. Head tilted downward results in direction of gaze above the line of sight and induces extorsion. Head tilted backward results in intorsion. Maladaptions offsetting the induced stresses result in compensating astigmatism.

The scientific research of many other scientists showed that visual space is constructed from our movements and the direction of movements in responding to gravity. This leads to the conclusion that our visual space and our localization in that space are as accurate as our capacity to direct our movements in relation to visual input.

One of the major contributions showed that the primary function of the fovea is not acuity, but to provide a reference benchmark, a space center for orientation. The prolific research of Dr. Harmon and his colleagues provided much to clinical Optometric practice.

Lessons on the Lens

The previous article concluded with Dr. D.B. Harmon’s research statement: “One of the major contributions showed that the primary function of the fovea is not acuity, but to provide a reference benchmark, a space center for orientation.”

Dr. Harmon stated that the retinal mechanism is a complex network designed to receive and distribute light over the entire neural network to begin the elaborate process of vision which is the deriving of meaning and directing of actions.

Harmon’s electromyographic studies revealed, conclusively, how the imposition of lenses influences orientation and localization. The addition of lenses to the ocular convex optical system changes the light distribution on the retina. The essential change is reflected in the degree of muscular tonicity. Addition of plus lens power reduces supportive muscle tonicity. Reduction of plus or increase of minus lens power increases tonicity. Addition of excessive amounts of plus creates an alarmingly high degree of hypotonicity that, literally, could lead to atrophy. Whereas, with inadequate plus, a state of hypertonicity could result in various forms of maladaptations as the organism would grow along a line of stress in order to reduce stress. The appropriate application of lenses is critical to the future development of tonicity, posture and learning beyond the limited consideration of just visual acuity.

A lens can do nothing to a person. A lens can only alter the light entering the eye. However a person can do much with a lens. Depending on the orientation and development of that person, the response to the light, altered by the lens, can affect posture, meaning and action.

The value of a lens is that it changes the orders to the system. The change is directed to the posturing mechanism of the body, a change in orientation. The change is NOT directed to the higher order mechanisms. The effect might be called the “tonus of attention.” The stress point retinoscope reveals what lens formula can be utilized.
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with the data of the analytical examination revealing the value of the lens. This is different from the value of compensatory lenses.

All ocular compensations are reflections of postural alterations. In the article, “Restrained Performance as a Contributing Cause of Visual Problems,” Dr. Harmon stated that purposeful and new constructive adaptations can be instigated through lenses and, if the accompanying performance is properly directed, these new related inputs and directed performances can lead to correction or reduction of visual malperformance.

Recently, OEP published a new edition of *Lens Power in Action* by Robert A. Kraskin, OD, edited by Drs. Paul Harris and Gregory Kitchener. I strongly recommend using this book as an important guide to all optometric lens applications. Dr. Kraskin’s dedicated study and clinical applications are valuable, practical results of the research done by Drs. Skeffington and Harmon and their associates. Dr. Kraskin’s book is a must for all optometrists as a guide in optometric lens application and visual training.

Inside the Yale Child Development Clinic

In 1944, while on a return trip to his research at the Yale University Child Development Clinic, Dr. Arnold Gesell was detained in Baltimore. He took advantage of the time to visit the OEP Baltimore Myopia Project and to meet with Drs. A.M. Skeffington, George Crow and G.N. Getman. The information he received from this meeting regarding factors relating to the development of Myopia aroused his interest and resulted in a continued relationship with optometry that influenced his research at the Yale Child Development Clinic.

OEP, American Optical Co. and others funded a 5-year research study on the “Development of Vision” at the Yale Clinic. Arnold Gesell, MD, Frances L. Ilg, MD and Glenna E Bullis headed this research. Active participants in the research were two optometrists, Vivienne Ilg, OD, (sister of Frances Ilg, MD) and G.N. Getman, O.D. In addition, there was continuous consultation with Dr. Skeffington and the Optometric Extension Program. This research resulted in the book, *Vision: Its Development in Infant and Child* published in 1949.

1949 was a memorable year for Developmental Optometry. Related events were:

- Publication of *Vision: It’s Development in Infant and Child*.
- Dr. Gesell retired from Yale.
- Drs. Getman and Ilg returned to private optometric practice.
- Dr. Richard Apell left the faculty of Northern Illinois College of Optometry (NICO) to join the Gesell Institute.
- I assumed Dr. Apell’s position on faculty at NICO, as head of the Visual Training Department.
- Dr. Gesell joined Dr. Skeffington at OEP congresses.
- Dr. Getman began invitational classes in Developmental Optometry in the basement of his optometric office in Luverne, Minnesota.

The results of decades of research by Dr. Gesell, both at the Yale Clinic and at the Gesell Institute, have withstood the test of time. I recall, during his Research Fellowship at the Gesell Institute, Dr Gesell’s response to my concern about publications contesting the results of his research. He modestly stated, “If our research results cannot withstand the tests of time, they deserve to die!” For the past 55+ years, the results are still being used in many countries, as well as...
the United States, by child development clinics, schools and child care practitioners.

The concepts of vision development published in *Vision: It’s Development in Infant and Child* are still appropriate for vision development in 2004 and beyond. Chapter 2, “The Motor Basis of Vision” (“Vision is motor,” Skeffington) introduces the most basic concepts with:

“We may think of the unitary action system as a labile postural mechanism. By posture, we mean the position assumed by the body as a whole, or by its members, in order to execute a movement or to maintain an attitude and action.”

“If our research results cannot withstand the tests of time, they deserve to die!”

-- Dr. Arnold Gesell

### Developmental Optometry in the 1950’s

The massive, enthusiastic movement of Developmental Optometry in the 1950’s was initiated by research studies in the development of vision in infants and children which were conducted at the Child Development Clinic of Yale University. These studies were under the direction of Arnold Gesell, M.D., Ph.D., Sc.D., assisted by Catherine Amatruda, M.D., Frances Ng, M.D., Louise Ames, Ph.D., G.N. Getman, O.D., Richard Apell, O.D., and others. They were excellent observers with keen insight into child development and they published many books during the early 1940’s. 1945’s *Embryology of Behavior, the Beginnings of the Human Mind*, narrates development starting with the human embryo. This book is still a classic today. 1949’s *Vision: It’s Development in Infant and Child*, provides the sequence and continuity of vision development as an important reference for all optometrists.

Dr. Gesell joined with Dr. A.M. Skeffington to share his research with optometrists at many OEP Congresses during the late 1940’s through the 1950’s. At the Gesell Institute, he was generous in spending time with those of us participating in the research. I have a lasting memory of an important point he made. Dr. Gesell emphasized that the sequence and continuity of a child’s stages of development were more important than the age at which that child reached a stage. His contributions to the continuity of the expanding spiral of the “cycles of development” demonstrate the changes in the development of a child’s learning process from birth.

I was fortunate enough to be invited to work at the Gesell Institute while Dr. Gesell was still alive. One day, shortly after my arrival, I visited Dr. Gesell in his office to ask him why, since he was an M.D., did he invite O.D.s, instead of M.D.s to participate in his visual research. In his typical, quiet, modest, manner, Dr. Gesell asked me to sit down and explained that before he earned his medical degree, his primary Ph.D. was as a functionalist. It was only later, to obtain a better understanding of structure and to expedite the publications of his research at the Child Development Clinic at Yale
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University, that he decided to earn an M.D. degree.

Dr. Gesell then continued to explain the plan of the Gesell Institute. On one side, he had a list of structuralists, M.D.s. On the other side was his list of functionalists, O.D.s. When an evaluation indicated a structural problem, he called in the structuralists, M.D.s, to repair the structure. But, after the structure was repaired, it was most important to emphasize the development of the child and that had to be done through function, therefore he utilized his functionalists, the O.D.s.

Since the commitment of the Gesell Institute was to develop the functions of children, it was logical to invite optometrists to participate as functionalists in the visual research at the Institute.

During the past 50 plus years, Dr. Arnold Gesell and the staff of the Gesell Institute contributed greatly to the development and growth of Optometry. They were a guiding force that helped Optometry become a unique profession dedicated to helping develop visual functions of children. Their contributions are still influencing our profession, and current neuro-scientific research continues to confirm that the development of function is primary to the development of the child.

Child Development

During the five year Research Vision Study at the Yale Clinic of Child Development, Dr Gesell utilized the optometric services of Drs. G.N. Getman and Vivian Ilg and requested a regular consultation with Dr. A.M. Skeffington. The result of the close relationship of Drs. Gesell and Frances Ilg, together with Glena Bullis, expanded their knowledge of Optometry while Drs. Skeffington, Getman and Vivian Ilg expanded their knowledge of child development.

The resulting publication of Vision: It’s Development in Infant and Child, in 1949, became an Optometric guide and an expansion of knowledge for many disciplines as well as for parents and the general public. It opened the horizons for optometrists, giving them the ability to provide a greater service and it is still an important guide for the development of vision. The prenatal period starting from conception through pregnancy and the development of the fetus is still valid. The influences of tempo, drugs, pollution, etc. may influence pre and post natal development, but the sequence of development and the influence of gravity still exist in all areas of this planet. Development may be influenced by changes in the environment, but the knowledge of the sequence of development of life and vision is still as important as it was in the past.

Originally, the first publication of Vision: It’s Development in Infant and Child, was as a report of the 5 year research study at the Yale clinic. The demand required several printings. In 1959, it was republished, with additions, as a reference guide. To this day, it is used internationally and can be found in offices and libraries.

Vision: It’s Development in Infant and Child is an excellent resource in many areas, such as:

- Interpretations of changes in brightness, color and motion of retinoscopic reflex in infants and children.
• Visual development in cerebral palsy, amentia, blindness and unusual developmental delays.
• Sequence of development through the ages and stages of growth.

Use of the index can provide a wealth of knowledge for clinical application.


While working at the Gesell Institute in 1955, I asked Dr. Gesell why he, as an M.D., was inviting optometrists to the Institute instead of M.D.’s. He presented his list of M.D.’s and said, “If I need a structuralist, I call someone on this list to repair the damaged structure. Optometrists are functionalists, as I am. Together, we can help children develop function and achieve a brighter future.”

I will never forget that experience with Dr. Gesell or the research from Yale and at the Gesell Institute. I received knowledge to help children enjoy better and brighter futures. Knowledge that I have used in the past and will continue to use in the future. That research was done with the support and help of optometrists. The evidence is still available in the treasures of the texts, *Vision: It’s Development in Infant and Child* and *Preschool Vision*.

As we look at our heritage, we realize that the uniqueness of Optometry started with a man named Dr. Arnold Gesell. He was the one that realized that Optometry, through vision, had the ability to help children (and adults) achieve to higher levels in life. He gave to Optometry the insight for this achievement. We must not lose this great gift that was bestowed on our profession.

“Optometrists are functionalists, as I am. Together, we can help children develop function and achieve a brighter future.”

-- Dr. Arnold Gesell
Gesell and Developmental Optometry

The five-year research study reported in Dr. Gesell’s *Vision: It’s Development In Infant and Child* is a whole body analysis of the development of vision. It confirms the basic optometric concepts presented by Dr. A.M. Skeffington’s 1931 book, *Differential Diagnosis in Ocular Examinations*.

In this book, there are two statements that stand out:

*Whereas formerly the whole consideration was given to the laws of mathematics and physics, today more and more the Refractonist is turning to an understanding of the neurological principles involved...There is a co-ordination between the muscles of the entire body and those of the eyes.*

Dr. Skeffington and the OEP optometrists of the 1930-1950s were called “functionalists” (whole body) and the period was called “Functional Optometry.” Gesell’s research study led to the period of “Developmental Optometry” providing the sequence of the development of vision and the knowledge gave more effective appropriate care based on whole body development. The findings of the research study caused a great step forward for optometry. The validity has been proven over and over in optometric offices by the success we have had in caring for our patients.

There was a major emphasis in Gesell’s research on “neurological tonal posture” in the development of movement. This is, developmentally, more basic than the body “posture” in reducing near point visual stress. The Gesell research on posture involved the basic development of movement and vision.

To continue the basic concepts from Chapter 2, “The Motor Basis of Vision,” of Gesell’s book *Vision is Motor* we may think of the unitary action system as a labile (unstable) postural mechanism. By posture we mean the position assumed by the body as a whole, or by its members, in order to execute a movement or to maintain an attitude and action....Action presupposes a postural set, and any movement of an action may be regarded as a postural attitude. Postural attitude issues into postural action....Fixation of posture is sustained inhibition of a potential or completed action....Posture may thus be either static or dynamic. Static posture produces station, steadiness and stance....Dynamic posture translates attitude into adaptive reactions such as locomotion, prehension, and inspection....Both static and dynamic postures entail tonal (tonicity) discharge and expenditure of energy....The first and foremost purpose of this postural function is to adjust to the ceaseless pull of gravity (antigravity), and to changes of position.”

Bilateral and binocular related motor functions involve relationships of 400 to 600 paired skeletal muscles with only 47 pairs of visceral muscles. The development of vision is influenced at every turn by motor factors. Whether the eyes are immobilized for visual fixation or whether they move in pursuit, the postural set of the organism is of primary importance. Therefore, it will not be misleading to interpret development of visual functions in relation to a basic general motor system.

Diagnosis of ocular dysfunction may be due to problems at the more basic, holistic...
Nurturing Total Development

In 1947 Drs. E.B. Alexander and A.M. Skeffington initiated a long range Optometric Extension Program plan to alert and prepare Optometry for the development of vision in infant and child in optometric offices. The emphasis of the OEP plan was to provide knowledge of the development of functional vision.

To start the plan, Dr. Arnold Gesell was introduced as the keynote speaker at the 1947 Great Lakes OEP Congress. His presentations described his ongoing study at the Yale University Clinic of Child Development. He was conducting this study with Frances I. Ilg, M.D. and Glenna Bullis, assisted by Vivienne Ilg, O.D. and G.N. Getman, O.D. The results of the study were the basis of the book *Vision: Its Development in Infant and Child*, published in 1949.

The presentation by Dr. Gesell at the 1947 Congress stirred a great deal of interest and excitement among the optometrists and optometric students. During his address, Dr. Gesell placed particular emphasis on the role of optometrists as functionalists. The following statements from his study explain his emphasis:

> We undertake to show that developmental concepts and methods of procedure may be applied in the early examination of visual functions, both normal and deviant. A developmental approach broadens the scope and the goal of visual hygiene. It shifts the emphasis from acuity and refraction to the total visual economy and developmental welfare of the child.... Developmental optics is concerned with the ontogenesis and the organization of visual functions in their dynamic relation to the total action system.... An ontogenetic interpretation of child vision, therefore, must take into systematic account the growth of the motor patterns of the total system.... So infused are vision and action systems, that the two must be regarded as inseparable.

Publication of Dr. Gesell’s study created considerable interest among patients and professionals. Because of their great interest, optometrist began to search for more knowledge of the appropriate evaluation, care and guidance concerning the visual development of infants and children.

At the end of the Yale study, Dr. Getman returned to his home in Luverne, Minnesota. To spread the knowledge obtained during his work with Dr. Gesell, small groups of optometrists were invited to Luverne for a week of classes which were held in the basement of his office. I was fortunate to be invited to attend the first class. We learned to be good observers and were guided in the evaluation and visual development of infants and children. As other classes followed, the number of trained optometrists grew.

To further spread this knowledge, OEP arranged for Dr. Getman to present demonstrations of evaluations with infants and children in various locations around the U.S. At these live demonstrations, a large sheet of cheese cloth was hung to separate the lighted “stage” for Dr. Getman and his live subject from the darkened room where the audience observed and took notes. After the demonstration, the subject left and Dr. Getman enlarged upon and discussed the demonstration. These demonstrations, in the early 1950’s, gave further growth to the number of trained optometrist. To meet the growing demands of optometrists and the public, OEP created the Child Care Section headed by Dr. Getman.

Most of us who participated in the Luverne classes and attended the
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demonstrations returned to our offices with a new understanding, that visual development involved the development of the total child.

In our offices in Pueblo, Colorado, we offered free evaluations as our gift to the infants of our patients. The word spread to others and we provided our gift to them as well. This resulted in a rapid expansion of our practice which included more infants and children, as well as adults. To this day we continue to give free infant evaluations.

Demands of parents for more knowledge led to establishing a developmental nursery, pre-school and parent classes at Pueblo College. Parents attended their classes and served as teacher’s aids for the children’s classes. This gave them a hands-on understanding of vision and child development.

Through the years, research continued. Dr. Richard J. Apell, assisted by a small group of us working at the Gesell Institute, conducted a study to develop a preschool sequence of visual tests. Results were published by the AOA (1959) in the book *Preschool Vision*.

Continued research through the years has reinforced the Gesell concepts and provides additional knowledge of the development of the child. Today, we continue to expand on our evaluation of a child’s vision to further support the development of the total child.

Dr. Gesell, in his infinite wisdom, gave us the knowledge that when we deal with the vision of the infant or child, we are dealing not only with ocular problems, but mainly with the whole being of the child. We are guiding and helping to nurture total development. This knowledge was given to us over 50 years ago and it is a “truth” that still holds in the new millennium. The good we, as optometrists, can do for and infant or child through our knowledge and use of the developmental approach is our optometric heritage!

“...The good we, as optometrists, can do for and infant or child through our knowledge and use of the developmental approach is our optometric heritage!”

Vision Development in Infants and Children

The massive, enthusiastic movement of Developmental Optometry started in the early 1950’s with the contributions of Dr. Arnold Gesell and staff in their book, *Vision: It’s Development in Infant and Child*, (1949).

Knowledge and clinical application of visual development in infants and children spread through classes in Dr. Jerry Getman’s offices and OEP study groups, papers, seminars and congresses. As we applied the battery of tests to our young patients, we found a number of children with serious developmental delays. We needed more information beyond the application of lenses to help these children.

Research and planning by Drs. Skeffington and Getman resulted in an invitational course titled “Perceptual Training of the Retarded Child” at Purdue University with Dr. N.C. Kephart, February 20-25, 1956. The class of 24, consisted of Drs. A.M. and Mary Jane Skeffington, G.N. Getman and motivated optometrists, including myself. It was a week of intensive study of retarded children.

The enthusiasm of the participants led to the plan for the Glen Haven (Colorado) Achievement Camp for Retarded Children in the summer of 1957. The program involved retarded children (campers) and at least one parent for each camper. Each family group was housed in a cabin and all meals were in
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the community dining room at scheduled times. The parents attended classes every morning with Drs. N.C. Kephart and G.N. Getman. The campers participated in individualized programs directed by informed optometrists.

Prior to attending the camp, each camper received an optometric visual analysis and a developmental evaluation which were used to plan the individualized program for that camper. The optometrists, as a group, met each day with Dr. Getman to discuss the daily plans for each camper. Each plan had to meet basic functional standards:
1. Daily structure with responsibilities. Each camper had to follow a daily schedule: a time to awaken, and a plan to meet at the right time and at the right place.
2. Participate in daily anti-gravity activities for balance.
3. General and specific movement activities including balance boards, walking rails, trampoline, swimming pool and other mind-body controls.

We, the optometrists, had to record daily observations of performance and progress for each camper.

The first week, the parents attended morning classes for better understanding of child development with Drs. Kephart and Getman. The second week, they watched the staff directing the program for their child and for other campers. The third week, under the direct supervision of the optometrist in charge, the parents participated in planning and directing the activities of their camper. The rest of the time each parent planned and directed the program for their camper with the optometrist overseeing the plan and direction. The plan was to prepare the parents to continue the program beyond the time at camp.

The developmental approach, at that time, was to arrange conditions on a concrete level with sequential, general to specific, activities. The results were amazing. Current research has confirmed that therapy done in a sequential order is still the most effective approach to attain the best results.

Media reporters took photos and gave our program good coverage resulting in visits by several psychologists, such as Dr. Alfred Strauss and Dr. Ray Barsch, and by many educators and other professionals.

These activities of optometry resulted in Dr. Getman serving on the boards of The Learning Disabilities Foundation and the Retarded Children Association and many of us became active in these organizations. Optometry was highly regarded as a source of solutions to developmental needs for children and adults.

The Birth of Developmental Optometry

The history of Developmental Optometry is the story of Dr. Gerald N. (Jerry) Getman. But the story really began with his father, Nathan Ernest Getman, originally a jeweler who accepted a trial lens set as collateral for a money loan. When the man did not return to redeem his trial lens set, Nathan took the two week Optometry course at the Needles Institute of Optometry and Ophthalmology in Kansas City (The same course that launched the career of A.M. Skeffington). So began the optometric heritage of Gerald Nathan Getman and his brothers.

Jerry received his O.D. degree from the Northern Illinois College of Optometry (formerly the Needles Institute) in 1937, and established a private practice in Luverne, Minnesota, where he lived with his wife Clara and his children.

In September, 1944, he volunteered to join Drs. Ward Ewalt, George Crow and A.M. Skeffington in the Baltimore Project to
prove the effectiveness of optometric care of myopia in opposition to ophthalmological claims.

During this period, Arnold Gesell, PhD, M.D., was stranded in Baltimore on a return train trip to his work at Yale University in New Haven, Connecticut. Dr. Gesell’s curiosity took him to view the Baltimore Myopia Project where he met with optometrists and ophthalmologists. This meeting resulted in an invitation for Dr. Jerry Getman to visit him at Yale. The visit developed into an ongoing, part time, relationship for research into the development of vision.

Dr. Getman divided time between his family and his optometric practice in Luverne and time with Dr. Gesell studying visual development in infants and children. Results of the study were published in the book *Vision: Its Development in Infant and Child*, published in 1949. Dr. Getman then returned to full time practice in Luverne. He had two purposes, one was to give clinical application of his knowledge of infant vision that he had obtained from his study. His second, was to spread the knowledge by teaching it to other optometrists.

I was privileged to participate in the first class which was held in the basement of Jerry’s office in 1951. Our enthusiasm spread to other optometrists and Dr. Getman was in great demand. During his lectures, Jerry demonstrated his optometric visual examination working behind a large cheesecloth curtain so the patient would not be distracted by the attendees of the lecture.

This was the birth of a massive, enthusiastic, optometric movement within the United States and internationally, called “Developmental Optometry.” As a result of this momentum, optometry developed close relationships with Education, Psychology and Child Development, which lasted through the 1950’s, 60’s and 70’s.

The OEP Child Care Section was formed with Drs. Homer Hendrickson, Robert Henry, Wayne Knight and George Slade to help Dr. Getman in the development of materials and the dissemination of the knowledge of evaluation and care of vision development.

In 1949, when Dr. Getman returned to Luverne, Dr. Gesell engaged Dr. Richard Apell, my NICO Visual Training Department faculty associate. Shortly after Dr. Apell’s arrival, Dr. Gesell retired from Yale and established the Gesell Institute of Child Development, funded by the Andrew Mellon estate.

Dr. Apell continued the visual development research with Drs. Gesell, Francis Ilg and Louise Ames. This research was assisted by Drs. John Streff, Harold Wiener, William Moskowitz, Orin Ide, Bernard Jander, Ray Lowry and myself. In 1959, AOA published the results in the book *Pre-School Vision*.

Dr. Apell remained on staff at the Gesell Institute until his retirement. Through his research, he made significant contributions to optometry. Though retired, Dr. Apell continues to give of his time and knowledge to our profession.

“\nThis was the birth of a massive, enthusiastic, optometric movement within the United States and internationally, called “Developmental Optometry.” As a result of this momentum, optometry developed close relationships with Education, Psychology and Child Development.”
Mentors of Our Optometric Heritage

Recently, I received an inspiring response to “Our Optometric Heritage” from one of our young professionals. She remarked on how wonderful it must have been to be a part of the evolution of Behavioral Optometry. And she was so right. It was wonderful.

Her feelings about our history were so strong that she suggested someone should make a movie. She felt the general public would find this history interesting and exciting. Think what that would do for Optometry!

The letter made me realize what our younger generation has missed. To give them more of a feeling for our optometric heritage, it may be helpful if they knew more about our mentors. Starting with Dr. G.N. Getman, the man who headed the first Child Care Section of OEP (the beginning of Developmental Optometry for infants and children). This article shows a picture of Dr. Getman holding up an infant to evaluate the infant’s vestibular response to gravity. From the picture, it can be seen that not only was he evaluating the baby, but also he was enjoying every minute of it.

Another inspiration received from the letter was to re-read Jerry’s book, How to Develop your Child’s Intelligence. Though I have read it many times before, this time was different. I re-discovered a “wealth of knowledge”. I am sure that many others have had the same feeling I had about things they have read. The more you know about a subject the better you understand it and as a result, there is more understanding of what you read.

In 1949, Dr. Getman had completed his role in the 5-year research study at the Yale Clinic of Child Development with Dr. Gesell. He returned to his home in Luverne, Minnesota, to spend more time with his family. Also, there was another project to pursue.

The time spent with Dr. Gesell brought new insight into the development of infant and child and demanded a new approach. To have space to continue his research and learning, he designed the “basement” of his office to be patterned after the dome at the Yale clinic (see page 12 of Vision: It’s Development in Infant & Child). The center of the room would be well lighted, for demonstrations. The peripheral would be dark, with screening for parents and observers to sit behind to see, hear and study the activities.

When Dr. Getman lectured, he always emphasized that his demonstrations would be done with live subjects. In fact, on the lecture circuit he carried rolls of cheesecloth that he used to separate the observers, sitting in the dark, from the demonstration.

While his office was being redone, Dr. Getman visited Dr. Carl Shepard, head of the Research Department at Northern Illinois College of Optometry (now ICO). He was enthusiastic about the vision research study at Yale and was anxious to spread the knowledge he had gained. He told us about plans for his own research and the classes he would hold in his office.

I say “us” because, as a senior student, I was assigned to the Research Department and that is how I first met Dr. Getman. I was thrilled to learn that he was planning to have classes on infant and child development as soon as his office makeover was completed. I attended the first class in Laverne in the
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basement of Jerry’s office with Drs. Amiel Francke, Homer Hendrickson, Leonard Emery and a few other optometrists.

The class was limited in size, but unlimited in time. We spent long days that turned into a memorable week with Jerry. We learned to be observers of infant behavior and movement. We learned the use of the retinoscope to understand development and learning. Most important, we learned that the sequence of movement in whole body function is an indicator of development and offers insight into vision development. These insights have lasted for over half a century and will continue in the minds of future generations.

Breaking Ground in the Evaluation of Infants & Children

Recent requests indicate a revival of interest in optometric evaluations of infants and children’s vision. Operation Bright Start, the Infants’ and Children’s Vision Coalition, AOA, COVD, OEP and various state optometric activities seem to be reviving the enthusiasm of the Gesell-Getman era of the 50’s and 60’s. In previous articles, we presented the history of the Gesell-Getman relationship. Many of the current requests are for more information regarding the evaluation tests of infants and children and the application of those tests.

The 10-year study at the Yale Clinic of Child Development resulted in the 1949 publication, Vision: It’s Development in Infant and Child. This study by Drs. Arnold Gesell, Frances I. Ilg, Glenna E. Bullis and assisted by Vivienne Ilg, O.D. and G.N. Getman, O.D. was supported by grants from the Optometric Extension Program and The American Optical Company.

The Yale study was holistic in the analysis of vision. It developed “Examination Sequences and Procedures” for the developmental periods 0-4 years and 5-10 years. Details of the examination included Ophthalmoscopy, Retinoscopy, Dangle Bell, Phorias, etc. This was published in the text, Vision: It’s Development in Infant and Child pages 297-304.

On pages 305-320, the “Onto Genetic Gradients of Visual Behavior” presented the gradient sequence of a basic plan of maturation growth trends in:

1. Eye-hand coordination
2. Postural orientation
3. Fixation
4. Retinal reflex
5. Projection

These gradients indicated a general sequence of development. Optometrists who used these evaluation tests learned the sequence of “expecteds” and also learned the skills of good observations.

After the 1949 publication of Vision: It’s Development in Infant and Child, Dr. Gesell received emeritus retirement from Yale. With the support of his staff at Yale, he received grants to start the Gesell Institute in New Haven. Dr. Richard Apell left the NICO faculty to join the staff at the Gesell Institute as Director of Vision and to continue the vision research.

Dr. G.N. Getman returned to his family and clinical practice of optometry in Luverne, Minnesota. Now, his challenge was to spread the knowledge. Jerry decided to conduct an evaluation study in his office.

In 1951, for his first class, he invited a small group of interested optometrists (including myself) for a week of study in the basement of his office. We studied the material Jerry had developed for clinical optometric practice. It was a very concentrated week of demonstrations, applications and, above all, learning to be good observers. Jerry’s plan was, after the
one week of training, we would return home for a year of practical application in our offices (with continued communication with Jerry). We then returned to Luverne for a second week of brainstorming and expansion. This plan was duplicated with other classes for several years until the “OEP Child Care Section” was formed.

Specific materials and techniques were given for each test to insure comparable results from time to time and child to child. It was highly recommended that the sequence of the tests be maintained. If it was necessary to deviate from the sequence, explanations were noted.

The basic sequence of visual development testing was: Dangle Bell, Retinoscope at Far, Retinoscope at Near, and Circus Puzzle Form Boards.

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The tests of the advanced sequence were:
- Spontaneous Drawing
- Incomplete Man
- Visual Copy Forms
- Tactual Forms
- Sized Blocks
- Key Forms
- Form Board (3-figure, 6-figure, and 6-figure split forms).

The original Circus Puzzle Form Board was made in England and was produced in the U.S. in a modified form. It consists of different size whole figures. The purpose was to question the ability to perceive size, shape, color and figure-ground relationships and to observe eye-hand coordination.

Our space is limited but knowledge is unlimited in our optometric heritage!

Understanding Human Development

In classes presented by Dr. G.N. Getman retinoscopy was an indicator of mind-body changes. Retinoscopy was performed on the floor so the infant was able to manipulate his/her body posture against gravity without support. Retinoscopic reflexes of color, brightness and motion were indicators of neural functions*. This is knowledge that we still use today in our examinations of infants and children.

We learned much more from Jerry, and the following statements have been very important to us:

1. Vision is an external reflection of an internal neurological organization. Vision is an indicator of mind-body control.
2. Retinoscopic changes are indicators of mind-body development.
3. Learning the sequence of movements gives us indications of foundations for the development of intelligence.
4. Intelligence is considered a development of the mind.

In 1952, the first edition of Jerry’s book, *How to Develop Your Child’s Intelligence*, was published. Demands for the book was great. Future editions kept increasing in numbers and by 1962, the 7th edition was expanded to 15,000 copies and included editions in Danish and French.

In 1956, the research program expanded to include the studies by Dr. Strauss with retarded and developmentally delayed children. This research was continued at Purdue University where the study expanded to the underlying factors in the development of retarded children.

Discussions of developmental delays in retarded children resulted in the decision to continue a research study at the Glen Haven Achievement Camp in Estes Park, Colorado. In the summer of 1958, we assembled with the children who were called “campers” and their parents. Most of the children were developmentally delayed with visual problems of binocularity, amblyopia, strabismus, and partially sighted.
During the first week, Dr. Getman and the optometric staff performed a developmental evaluation of each child, while Dr. Newell Kephart oriented the parents. We had received case histories before camp so we would have a background on each child. Our evaluations included a visual and a developmental mind-body control evaluation. Dr. Getman and the staff planned a developmental program for each child to develop mind-body control for the development of intelligence.

The sequence for development of intelligence began with the development of mind-body control with visual direction and visual guidance. Emphasis was on mind-body control through movement. Each child started at a basic level of success. With challenge of mind-body control, intelligence is developed through experiences of mind controlling body.

Arranged conditions on balance boards, walking rails, trampolines, swimming, water activities in the pool, hopping, skipping, and jump rope were all at varied tempos and conditions. Slow motion involved more control than the momentum of speed.

Each day, parent classes and camper classes were in the mornings. In the afternoon, we had staff meetings, as well as meetings with visiting professionals. During the last few days of the final week, staff members re-evaluated the campers while Drs. Kephart and Getman held private conferences with each set of parents to discuss the results, answer questions and discuss the program to be continued. Reports of the campers from parents continued to show great progress of their children both at school and in their daily life. In 1958, the parents of the camp played an active role in forming the Learning Disabilities Foundation on a national level with Dr. Getman on the Board of Directors and Dr. Kephart in an advisory capacity.

We have a better understanding of Human Development, not only because of our experience with Drs. Getman, Strauss and Kephart and with the Campers at Glen Haven Achievement Camp, but also because of many years of clinical experience evaluating infants and children. We know that development of mind-body control involves control of mind to control body movement. We know that there is a sequence of movement for development beginning at birth, for example, turning over, then rolling, creeping crawling and ocular movements for visual guidance, all of which should precede walking. We know that to help all children, it is necessary to follow the normal sequence of development and that movement is the most important factor. Development in Infant and Child Learning and intelligence does not happen without movement. With this knowledge, we can guide children, and adults, to attain a brighter future and achievement in life.

* Chapter XI, Pages 172-176 in Vision: Its Development in Infant & Child
Concepts of Successful Vision Care in Infants & Children

The introduction of Developmental Optometry to optometric clinical practice begins with the OEP. OEP’s plan was:

1. To introduce to the public an optometric service of visual care for infants and children as developed by the research presented in the publication, *Vision: It’s Development in Infant and Child*.

2. To expand optometric knowledge and the training of optometrists to prepare them to satisfy the demand of the new market.

Drs. G.N. Getman and Vivienne Ng introduced the optometric concepts of Dr. A.M. Skeffington/OEP to the Yale study. These concepts, tested for several years by Dr. Arnold Gesell, were confirmed and published internationally (*Vision: It’s Development in Infant and Child*). As a result, optometry was established, with respect, as a “unique profession.”

A review of the concepts which contributed to the success of visual care received by infants and children for so many years has to begin with chapter four of the Gesell publication which introduced “The Motor Basis of Vision” by stating:

> This profound fact (evolution) requires us to think of vision as an act which is mediated by eye and brain, but which emanates from a growing action system within the total unitary pattern of the organism....From the standpoint of developmental optics, we may think of the unitary action system as a labile, postural mechanism....The first and foremost function of this postural apparatus is to adjust to the ceaseless pull of gravity and to changes of position registered by otolith and semicircular canals.

These statements confirmed earlier concepts of Skeffington that “vision is motor” and “vision is output.”

Chapter four further summarizes:

> Classical theories of vision have emphasized its sensory aspects to the neglect of motor factors. Newer theories recognize that even such refined attributes as fusion, projection, and stereopsis, have a motor element, indeed a motor origin....The component movements of vergence are horizontal, vertical and circular. Now all these movements, ocular and non-ocular are correlated, partly through experience, but chiefly through growth....An ontogenetic interpretation of a child’s vision, therefore, must take into systematic account the growth of the motor patterns of a total action system.

Page 47 of *Vision: It’s Development in Infant and Child* states that three major kinds of postural reflexes affect development of vision:

1. **Attitudinal Reflexes:** which orient the organism in space (anti-gravity). (i.e., Infants lying in supine posture, with gravity pull, are in a more [attitudinal] posture.)

2. **Righting Reflexes:** which return the organism to normal orientation (Localization, re-orientation). (i.e., to reorient to a prone posture, infants need to overcome gravity [righting] to reorient, localize and attend visually and totally.)
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3. Statokinetic Reflexes:
which keep the organism moving in the right direction (reciprocity in movement). (i.e., to move with directional guidance requires reciprocal interweaving bilaterally and binocularly [statokinetic]).

Developmental delays and interferences in the function of the total action system are indications of the development of the visual system. Delays in rolling, creeping and crawling are indicators of developmental delays in visual motor controls of tracking, localization, vergence, binocularity and visual processing. These delays are the most common underlying causative factors of the diagnosis in infant strabismus, amblyopia and many infant visual mal-developments.

In the practical, clinical application of all the presented evidence, a functional evaluation of a child’s vision development should consider the development of the total action system. This is the heritage of Developmental Optometry, to the development of vision.

The Behavioral Concept of Vision - An Insight

“In summation, it can be stated that the following three statements are representative of the total uniqueness of the Behavioral Concept of Vision: It is the only concept of vision that:
1. Involves the whole body as the visual process.
2. Is interested in and conceives of ‘prevention’
3. Gives consideration to the etiology of a visual problem as being anything but inherent in the system or a defective structure.”

This statement by Dr. Kraskin is the most comprehensive answer to the proverbial question: “What is vision?” It is holistic, it is functional, it is developmental and it is positive in application. Dr. Robert Kraskin was as unique in his life as he was unique in his practice of a unique profession.

After graduation from Pennsylvania College of Optometry, he spent a year preparing himself for the practice of Optometry by studying the OEP papers in his father’s office. Dr. Lewis Kraskin was an Optometric Extension Program (OEP) pioneer who practiced functional Optometry in Washington D.C. Also, he was a Naturopath who applied holistic care and Syntonics in his optometric practice.

I met Bob Kraskin when we attended the annual St. Louis Visual Training Symposium in 1950. That meeting started a lifetime bonding for us. Starting in 1952, we participated in the Ohio State Research Study under Drs. Sam Renshaw and A.M. Skeffington. After one of the sessions, I visited D.C. to observe the Kraskin optometric practice. I watched as Bob and his wife, Marion, guided patients through highly organized visual training programs. In the same bank building, I also visited Dr.
Amiel Francke’s office and was able to observe his highly organized V.T. program.

During that visit, I learned that four OEP optometrists in D.C. had started a group to study the monthly OEP papers. Members of the group were Drs. Kraskin, Francke, Paul Lewis and Morton Davis. This dynamic group has expanded through the years and now attracts many optometrists from surrounding states.

In 1955, Drs. Kraskin, Francke, Lewis and Davis sponsored a multidisciplinary meeting of optometrists, educators, psychologists and parents, at the Shoreham Hotel in Washington, to hear a report on the research programs of The Gesell Institute of Child Development in New Haven, Connecticut. Having participated in the research, I was fortunate enough to be the presenter. The response of the large, enthusiastic audience was overwhelming. An ongoing multi-discipline relationship in the D.C. area resulted from this meeting.

When the annual St. Louis Symposiums ended, the interactive brainstorming continued in Washington, D.C. Bob and Marion Kraskin established the “Skeffington Invitational Symposium on Vision” for optometrists in 1955. This meeting has brought optometrists from all over the world to present and discuss creative thinking in vision. The voice of Dr. Robert Kraskin has been silenced by his death, but his influence on vision continues to grow in the minds and hearts of those of us who continue to read his timeless contributions to Optometric literature and to attend the “Kraskin Invitational Skeffington Symposium on Vision” (KISS), now renamed to honor Bob.

In the October 1966 chapter of the OEP Papers, the introduction to Dr. Kraskin’s series, Vision Training in Action, he presented “A Philosophy of Vision Training.” Excerpts from that chapter offer insight into his concepts as applied to vision training:

- Vision is learned through movement
- Stress is essential for the activation of any movement.
- Learning is adaptation and requires adaptability of the organism.
- A philosophy of vision (and visual training) cannot ignore body dynamics and the total inter-relatedness.
- Stress (tonicity) is essential for learning which is a motor function.
- Positive stress is transient, it is essential for the initiation of any activity.
- Persistent stress may be considered negative stress.
- Negative stress results in adaptation referred to as a deviation, a warping or a compensation, a visual problem.
- The adaptation to negative stress is not the visual problem.
- The problem is the interference in the visual process or interference in the computing function of the human organism.

“What is vision?”

It is holistic, it is functional, it is developmental and it is positive in application.
Ten Principles For Understanding Human Learning

Dr. Robert Kraskin’s challenge was to study and understand human learning. This understanding gave him the insight to develop and apply the knowledge for guiding (not training) his patient to achieve their goals. He emphasized that the greatest importance of visual training is communication and a holistic approach. In his OEP series, “Visual Training In Action,” he stated:

The significant role of communication with the patient is critical so that he will be able to appreciate, understand and utilize his more efficient means of handling the environment, needs and ultimate goals” The following condensed excerpts of Dr. Kraskin’s 10 principles are presented from Series, No. 5, ‘Principles of Success in Visual Training’.”

Principle #1:
The patient selects visual training: We accept or reject him/her for visual training. Following the initial examination, the patient and/or parents return for a conference appointment at which time the alternatives of approach to the visual problem are laid out specifically in relation to anticipated benefits that can be expected to result from each of the three alternatives:

1. The conventional, a lens formula derived from “directives of lens application.”
2. The developmental is also a lens formula directed toward doing something to modify the embedding of the visual problem.
3. The achievement levels of visual training.

One item is never offered or prescribed. The patient is offered alternatives and the opportunity to select the approach that best fits his needs. We do not “hard sell” visual training. We reserve the right to accept or reject the patient for training, for the good of the patient.

Principle #2:
Age is not a significant factor in consideration of acceptance or rejection, motivation is the significant factor. As long as the needs exist and the benefits are desired and, assuming the proper motivation exists, a patient can be acceptable.

Principle #3:
The patient selects visual training because his/her needs, which determine the expected benefits, can only be derived by means of visual training.

Principle #4:
Visual training is directed toward the development of more adequate and necessary visual abilities that will permit the patient to attain his/her goal. Visual training is not directed toward the modification of the optometric measurements. The modification of measurements, in itself, cannot be considered a means of determining the degree of success in visual training. This does not imply that improvement of abilities nor application of abilities that have been improved.

Principle #5:
Visual training procedures are not directed toward or determined by inadequacies as observed or measured in such optometric investigations as the analytical examination. The visual training program and individual procedures are directed toward the development of a more effective system, not by “what is wrong” (the compensation). Procedures are not directed to reducing esophoria, myopia, etc.
Principle #6:
Visual training procedures are not determined by sheer empirical observation, but emerge as a result of some base model of vision. There are order, direction and structure to a visual training technique, and, of course, there is purpose. It provides a solution to a problem (need) and fits the framework of thinking, our model of vision.

Principle #7:
Each technique provides the patient with a problem to solve and it is most effective if the patient has but one route in which to solve it, the most efficient route. The technique alone is not the important factor, but rather that which goes into the technique is most significant. Visual training is a program of arranged conditions of learning. A problem is presented, the need to solve that problem is created which creates a stress. When the solution is discovered, the stress is reduced and learning has taken place. In visual training, every procedure must present a problem. The need to solve that problem must be created. This relates to motivation. Montessori called this “spontaneous discovery.”

Principle #8:
Visual training is not a mechanical procedure. The instrument (or lens) will not do the job. The patient must do something—the patient must participate and, likewise, the optometrist must participate. The instruments, lenses and/or the technique never could do the work. A patient with a need; willing to do something; and an optometrist willing to participate with the patient; helping him to solve his need. This is mutual participation.

Principle #9:
Each procedure must possess three characteristics:
1. Each technique must present a problem to be solved with a definite goal of success.
2. Each technique must set the stage for that which follows as a preparational set in an ever-spiraling upward elaboration.
3. Each technique must serve as a measuring device to know the degree of accomplishment on each procedure.

Principle #10:
Each procedure is related to every other procedure. The patient must be made aware of this and appreciate the relationship between any given procedure and his/her ultimate goal. Dr. Kraskin emphasizes the greatest importance of Visual Training is communication and a holistic approach. He stated:

We are dealing with a total system rather than just a total visual system, a total system which is a human being. Optometry directs our attention, primarily, to the dominant process of the human being, the dominant process of vision.

“The significant role of communication with the patient is critical so that he will be able to appreciate, understand and utilize his more efficient means of handling the environment needs and ultimate goals.”
Retinoscopic Reflexes and the Visual System

Dr. Robert Kraskin was committed to the precept that a program of visual training is not determined on the basis of “what’s wrong”, but is based upon a model of human development. These models are common to human beings rather than just to a particular individual. Individuals may possess differences in many areas as characteristics of their individuality. This is why there needs to be flexibility within the framework of the organized program. The fundamental purpose of the program is the development of a more efficient visual system that will satisfy individual needs common to all human development.

Dr. Kraskin considered his organized and orderly approach to visual training as “fundamental abilities” that everyone should have in order to possess a more efficient visual system. At the beginning of the office-centered program, the patient would be exposed to the following fundamental abilities:

1. Walking Rail
2. Motor Equivalents
3. Eye Control
4. Accommodative Rock
5. Fixations
6. Chalkboard Rotations
7. Wallach Rings or Directionality
8. Modified Updegrave or Parquetry Blocks

These eight techniques were assigned for a patient on the first day of office training, as well as, on succeeding early days of a total program. As each stage of success was reached, demand for the next stage was encountered.

The fascinating part is how Dr. Kraskin determined success in each technique for each stage. Those who observed him in the training room saw him dressed in casual, professional attire with his trusty retinoscope hanging in a holster at his side. He used the retinoscope to determine the efficiency of the patient’s processing responses in addition to the verbal and body responses. The observed retinoscopic reflexes were the patient’s manifested changes in motions, brightness and colors during participation in the processing of the learning activities.

In the 1940’s, Dr. Darell Boyd Harmon presented results of his research showing that retinoscopic reflex changes indicated neurological and biochemical holistic responses in learning. This research was confirmed at Dr. Arnold Gesell’s Yale Clinic and included in the 1949 publication Vision: Its Development in Infant and Child. OEP sponsored seminars and workshops to present Harmon’s evidence of a holistic visual response.

In 1950, Dr. Kraskin became an enthusiastic participant at the Harmon meetings and then at the Ohio State Renshaw Research activities. When the Ohio State aquatic divers sat and visualized their dives, he observed their retinoscopic reflex changes. The brightness, color and motions of the reflexes indicated control of orientation or disorientation in their visualized dives. He also went to the Ohio prison and observed the reflexes of prisoners in a lie detector study. The brightness, color and motion of the reflexes indicated positive or negative responses as quickly and sometimes more quickly than the machine. The following is a quick summary of the characteristics of reflexes:

- Dullness and Brightness of the Reflex
- Colors of the Reflex from Dull Red to Bright White
- Speed, Range, Promptness, Pick-up and Release of Motion
- Meridional Differences

From those valuable experiences, Dr. Bob Kraskin and many functional optometrists applied a holistic utilization of the retinoscopic reflexes that went beyond mere lens application. The retinoscopic...
Dr. Lawrence MacDonald: One of The Young Turks

During the 1950’s, a group of followers of Drs. Skeffington, Harmon and Renshaw and the OEP philosophy (called the Young Turks) were invited to the annual Ohio State University meeting for visual research and conference with the neuroscientists. One of these “Young Turks” was Lawrence W. Macdonald, O.D., from Massachusetts. He had an ability to assimilate information derived from many scientific and health oriented fields and to integrate that information into unique concepts and clinical optometric applications. During the Ohio State evening bull sessions, Larry would describe his optometric evaluation of patients using pulse, respiration, galvanic skin monitoring, and responses to lenses and prisms, and phoria and duction tests.

Larry suggested that optometric findings be interpreted upon the basis of “ranges of performance” rather than “point focus” and “ocular alignments.” He also elaborated upon the concept that emmetropia and orthophoria represent “evidence” of the existence of a visual problem.

In the September, 1954, New England Journal of Optometry, Larry wrote:

A range may be functionally described as the latitude through which any function may perform without upsetting its balance or relationship with any other function. It is interesting to note that the body has no function which operates as a point. Physiologically, the body has, among other things, a saline range, a calcium range, a hemoglobin range, and even a normal temperature range. Usually it tends to lower in the morning and rise during the day, reaching its zenith in the evening.... Physiologically, ranges act as a cushion or shock absorber to organismic functioning, allowing the organism freedom and smoothness of performance that could never be attained if operated on a point to point basis rather than a range to range hook-up. He could not walk if...
there were no stride or range in the legs, could not hop with no range or stretch in muscles. He could not breathe if there was no pulmonary range between expansion and contraction. Learning is an accumulation of relationships of experience and the relationships are in the form of a range or latitude. The child starts out with tremendous ranges. He is all over the place at once and gradually, through learning, begins to learn to control these ranges and make them more productive….If a child cannot learn without ranges, he could not effectively see without ranges, for seeing is a learned function. And, since much of learning depends on our seeing, think how difficult it must be for a child to study without adequate visual ranges. And yet, why have we in Optometry persisted in ignoring the ranges of vision and continued to find the exact focus on a retina?

We have not given the eyeball the latitude of the common camera with depth of field and depth of focus….If we agree that ranges are necessary for operation and achievement of the organism, what does emmetropia and orthophoria mean? Where are the ranges when plus .25D blurs and one prism diopter throws the dots out of alignment. Is it not surprising that the emmetrope or orthophore is usually the characteristic non-achiever in school? How can the child possibly achieve without ranges?

Dr. Larry Macdonald was a leader of and contributor to the development of Functional Optometry. The concepts presented in his writings are still valid today. Optometry has a wealth of creative thinking hidden in our literature which should be made more readily available to our students and young optometrists. This would give them an introduction to and a better understanding of the benefits of Functional Optometry.

Modern Optometry and Functional Vision

When Larry Macdonald wrote about ranges, he was talking about the use of ranges as applied by most OEP functional optometrists in their offices in the 1950’s and beyond. He had a unique approach to an evaluation. Because of the results shown by the research tests of Dr. Darrel Boyd Harmon, Larry Macdonald used those tests during his evaluations. He monitored the pulse, respiration and galvanic skin reaction of patients while measuring their ranges.

Recently, Gary Williams, O.D. sent me the cover of the OEP News of September, 1958. On the front page of that issue was an article by Dr. E.B. Alexander in which he said, “Optometry’s future course has been charted and clearly set forth in a statement on page 8 of the recently released AOA booklet, Your Eyes and Optometry, as follows:

Modern Optometry is based on the concept of functional vision. This means that in examination and correction, the optometrist considers the entire visual process, physiological and psychological. It is in contrast to the traditional concept of the eye as a static optical instrument. The optometrist’s objective is to enable the patient to see clearly, comfortably and efficiently for
each specific task, regardless of demand or distance. He concerns himself with the visual development in the growing child and the prevention, as well as correction, of visual problems.

Larry Macdonald’s writings clearly expressed the concepts of functional vision as stated in 1958 by the American Optometric Association and the concept of functional vision in common optometric practice in the United States.

Because of the response to my last article regarding visual ranges, I am prompted to share some additional comments on this subject from Larry Macdonald. In the Dartmouth Press report, “Motivation of the Visual Factors,” he stated:

One-third of those reporting symptoms, on examination, had no demonstrable ocular defects. They were emmetropes. In comparing those having several ocular defects with those showing negligible defects, it was found that those having the higher scores, scholastically, were also those with several ocular defects (compensations). Why would we not suspect this? If the child wants to achieve badly enough, he will build the ranges necessary for achievement at all costs. If no one is available to show the youngsters how to construct adequate visual ranges, the child will set out to do it himself even if he has to distort his whole being to carry out his plan. A puzzle may seem very simple to one who knows how it works, but to an outsider, it could appear as a maze. The child may find out how to put the pieces together even if he has to break every piece into several parts to make them all fit....When we, as optometrists, learn to interpret the findings we make as ranges in visual performance instead of points of focus on the back of the eyeball, then, and only then, will we be able to occupy, more knowingly, the field of vision. We will then be better able to understand the statement made by Dr. A.M. Skeffington that, ‘A Visual Problem Is Not An Eye Problem, But Can Create An Eye Problem’ and enter into greater horizons than optometry, or the world, has ever known before.

Visual Training & Intelligence

As I write this, we are all saddened by the loss of a great lady, Emily Bradley Lyons Monroe. She was an important member of our optometric family and a major contributor to the development of Optometry as a unique profession. We will miss her greatly, but we are grateful for the wonderful years she shared with us.

In 1948, Dr. A.M. Skeffington arranged for Dr. Ward C. Halstead to address the Southwest OEP Congress of Optometry. Dr. Halstead was Professor of Experimental Psychology in the Division of Psychiatry in the Department of Medicine at the University of Chicago. His presentation started with:

I want to talk to you, not so much about vision, as that term is used in the semi-popular or popular fashion. I want to talk to you about
vision in the sense of understanding or meaning. By studying vision, we are not going from vision to intelligence. We are studying one and the same process.

After attending that meeting, Dr. C.V. Lyons and his assistant, Emily Bradley Lyons, optometric pioneers, returned to their San Francisco office with plans for clinical research of Dr. Halstead’s statement. Van and Emmy believed that, by substituting the word “working” for Halstead’s “studying” the statement could be: “By working in vision, we are not working from vision to intelligence, we are working in one and the same process,” and then we can understand visual training at work.

Lyons and Lyons had tangible evidence of the power of visual training in building usable intelligence, but had no validated test that recorded the changes in intelligence adequately. Ward Halstead’s book, Brain and Intelligence communicated the nature of intelligence to them. It prompted them to search further for a means of validation. A year of searching finalized with Louis & Thelma Thurtones’ SRA Primary Mental Abilities Tests for ages 5-7, 7-11, 11-17. This gave the Lyons team the direct relationship of vision to intelligence recorded in the results of a validated test from an unquestionable source. For 5 years, their vision therapy patients received visual training and were evaluated optometrically and with the P.M.A. tests.

In 1954, they published the results of their first clinical research study in the Journal of the American Optometric Association. In this published report, Van and Emmy stated:

For all of us in optometry using this test, one vitally important thought must be kept foremost in our minds; we are not in the business of psychological testing. We are testing optometrically, thinking optometrically. Our thinking is in terms of visual skills abilities and levels and the relationship to usable, operable, functioning intelligence. You note, the word is intelligence – not I.Q. The term, I.Q., is psychological and educational terminology and should be kept out of our vocabulary.

After my first seminar at the San Jose Visual Training Conference in 1952, we were invited to the Lyons’ office to observe their visual training and the P.M.A. application. After the optometric evaluation and before receiving any visual training, the visual training patient was tested with the appropriate age P.M.A. test. Progress evaluations of vision and P.M.A. were used at intervals and there were post tests of vision and P.M.A. at the conclusion of the visual training program.

To start the training program, basic rotations, fixations, accommodative rock, etc. were established. This was for balance between the two nervous systems. Then they had to insure the matching of the temporal sequence of sound with the spatial patterns of vision for good visual memory. When visual and auditory patterns are matched and integrated, then the auditory must be dropped and the visualizing level maintained and expanded as primary.

Emmy was a sensitive, positive, spiritual person who influenced the patient to internalize and maintain an inner awareness to guide the patient’s learning. Her warm, positive guidance was a major factor in patient’s progress.

Dr. C.V. Lyons and Emily Bradley Lyons worked very closely with Drs. A. M. Skeffington, E.B. Alexander, George Crow and other OEP pioneers. They consulted and shared with other optometrists. As a result, the information they presented was not from their office alone. Our office in Pueblo, Colorado, was one of the optometric offices
using the Primary Mental Abilities Tests with visual training. We found a high correlation between the visual changes brought about through visual training and the improved intelligence as confirmed by the P.M.A. tests. This proved a valuable asset to our practice.

In 1954, the first of five articles was published by Lyons and Lyons in the Journal of the American Optometric Association. It was titled “The Power of Optometric Visual Training As Measured In Factors of Intelligence.” The article created excitement and stimulated more optometrists to include visual training in their practices and to have greater interest in education and psychology. (Reprints available through OEP.)

This new interest in Functional Optometry and visual training helped to increase the positive publicity for Optometry, and respect from public and professional circles grew. It added to the positive publicity which began in 1950 for Developmental Optometry. During those years, Optometry was considered a unique profession providing visual training and influencing positive changes of intelligence.

Lyons & Lyons: The Power of Optometric Visual Training

Previously, I discussed the “Power of Optometric Visual Training as Measured in Factors of Intelligence” by Lyons and Lyons. That first report was followed by four more reports published in the Journal of the American Optometric Association. All the reports were under the heading, “The Power of Optometric Visual Training”. The additional four were:

1. Case Studies Measured in Factors of Intelligence
2. A Loom for Productive Thinking
3. To Build Minds
4. Explored Through a Philosophy of Visualization.

The research studies, mainly conducted at the offices of Lyons and Lyons, utilized the use of a “search model” for maintaining a steadily directed course of training. They were conducted for almost 20 years from 1948 through 1967. The studies, as reported in the AOA publications, were expanded on by Emmy Lyons at her seminars. As a result, optometrists gained a greater understanding of vision, learning, and the development of intelligence, which they were able to apply in their office visual training. It became evident that without visual readiness and basic visual abilities, shifting visually to a higher level of processing is limited. The basic “visual machinery” must be in good working order so it will not interfere with comprehension. Basic visual training of rotations, fixations, accommodative rock, etc. and the functional application of lenses and prisms are used to provide the visual readiness for higher level processing.

According to Lyons and Lyons, “to derive a greater understanding of the more complex spatial visualization, the patient needs to experience effortless dynamic motion. What we are seeing with our eyes is radically influenced by our own body shifts as we attempt to balance and center ourselves.”

As a result of these studies, Lyons and Lyons developed a visualization series for visual learning without verbalization or rote drill. The series was made up of four units and as part of their seminars. They presented these units to be used clinically in optometric offices. The four units were:

1. Presented with the directive, “See don’t Say”
2. Introduces a more complex situation asking for a rotation or movement of arrows or figures in the mind’s eye and then to graphically reproduce the movement on a predictive basis of arranged groups.
3. Introduces “Visual Signs, the Principles of Abstraction and Visualization” to encourage visualization instantly without sub-verbalizing.

Visualization in this series is interpreted beyond the mental pictures most commonly implied. As optometrists, we consider visualization as the level of understanding or comprehension reached in a learning process when the dominant guiding factors directing the learning have shifted from some other sensory process to the visual field. Because of the rapidity of the visual process and because the mind is released from having to do a lot of unnecessary chores, different kinds of thinking emerge on an automatic, subconscious level of understanding.

4. Utilizes practical application of principles as we do in figure-ground training. Various targets in a wide circle in the peripheral field are used. The patient is asked to fix attention on the central target, while identifying peripheral targets. This emphasizes the idea of “trusting visualization and not arguing with it.” The freedom from doubt encourages imagination and creative thinking and is a valuable addition to the visual training program.

Lyons and Lyons stated:

As we continue working with the principles of body awareness and effortless balance, we understand more and more that the one constant in the entire world is the relationship of our own body to the force of gravity, the kind of balance and posture that encourages visualization is how the relationship is maintained, (not rigid) with flexibility.

Emmy placed great emphasis on visualization in balance and movement. She involved dance and music in all visual training programs.

On a personal note, when Van Lyons was diagnosed with Parkinson’s disease, Emmy developed a visual training program for Van with major emphasis on vision and movement. This included a rhythmic music pattern that matched his visual reception.

The contributions of Lyons and Lyons have influenced Optometry as a profession. The contributions have been a mainstay for optometrists for a generation. Their concepts are still effective today and can enhance the power of optometric visual training.

Stress and Vision

One of the greatest contributions of Dr. A.M. Skeffington and the OEP teachings was to “build the minds” of optometrists, as well as, the minds of their patients. It was a holistic understanding of vision. Dr. Elliot B. Forrest was one of Skeff’s “Young Turks.” He was a quiet, unassuming, dedicated student of Optometry.

While attending Northern Illinois College of Optometry, Elliot and I were classmates and close friends. At night, we attended the “underground” OEP classes (1947-49). We were part of a class of 500 plus returning WWII GI’s flown into Optometry’s boom of new clinicians.

Skeffington’s constant, broad search for knowledge led Elliott to read the literature of Optometry and all related disciplines. Elliott’s curiosity was never fully satisfied and it put him on an endless search, which lasted throughout his life. He integrated the expanding knowledge he received into
clinical application in his private practice. Through his lectures and prolific writings, he shared his knowledge and clinical experiences. At the clinic of the Optometric Center of New York, he applied what he learned and at the SUNY College of Optometry, he shared his knowledge with is students. Dr. Martin Birnbaum, a fellow faculty member at SUNY, described Elliott Forrest as a “philosopher, clinician and teacher.”


Elliott’s last book, Stress and Vision, published posthumously, was the result of many years of research. He was able to apply his research to help himself in his battle with cancer. Through the years of research, Elliott communicated with me and shared many of his thoughts.

Stress and Vision presents Elliott Forrest’s most advanced thinking, a psycho-behavioral approach expanding on the Skeffington view that nearpoint stress is primarily task-related. Elliott suggests that mental states are the primary factors that underlie functional visual disorders. He raises questions of the utmost significance:

- Why are the stress effects more pronounced in some individuals than in others?
- Does stress reside in the nearpoint task or in the individual?
- Are we the victims of our environment or do we create our own stress?
- And, what can we do about it?

Elliott suggests that the role of the clinician is not simply to remediate the ocular and oculomotor deficits but to influence and modify the behaviors and attitudes, preventively, which foster the deficits. Stress and Vision presents, not simply a philosophy of vision care, but a philosophy of life itself.

The College of Optometrists in Vision Development presented him with its highest honors, the A.M. Skeffington Award for contributions to optometric writing, and the G.N. Getman Award for contributions to developmental optometry, as well as, a special President’s Award. Dr. Forrest was a major contributor to the energy and discipline of behavioral optometry.

Elliott Forrest’s last two contributions, published in the Journal of Optometric Vision Development;

“The Tyranny of the Premise: Aspects of Psycho-Behavioral Philosophy of Visual Function” (December, 1984) and

“Going Beyond the Behavioral Model: A Challenge For The Future” (June 1987, published after his death in 1986) are worthy of consideration today.
Barry College Summer Program Developed

While practicing in Pueblo, Colorado, two boys were referred to our office. Both had been diagnosed as severely retarded and uneducable. After doing a complete developmental vision evaluation on each boy, we felt that, with proper programming that followed the sequence of development, these boys could be helped. But, the boys lived with their individual families in Miami, Florida.

The parents were intent on helping their sons and were eager to go through a period of hands-on training to understand the demands of the program. They left with knowledge of what was to be done and knowing that they could call at any time if they needed help.

It was not long before they were aware of much improvement in the boys. It was suggested that we have the follow-up evaluation in Miami. In this way we could talk with other parents whose children had problems and also to the schools they attended. There was great interest and soon arrangements were made for a ten-week summer program for fifteen students to be held in the Gym at Barry College (Now Barry University). One end of the gym was screened so that parents and professionals could observe without creating a distraction.

The first week was devoted to visual developmental evaluations and reviewing the case histories. Ages of the children were five to twelve-years with diagnoses of retardation, autism and problems in speech, vision, motor, etc. Intelligence tests showed that most were low and non-educable. All reports received indicated developmental delays. Our evaluations revealed bilateral and binocular problems, some were amblyopic and two were strabismic. Poor motor functions with low tone were a major problem with all the children.

Each child had a program developed for individual needs. As their abilities improved, the children were paired according to similar needs. As partners, they alternated roles as “student” and then as “teacher”. An adult guide helped maintain continuity of oral speech-auditory and directed visual-motor activities (see photo).

As “teacher,” the child had to visualize, from previous experience, the sequence of the visual-motor activity and to verbalize appropriate directions. The “student” had to visually localize on targets while maintaining anti-gravity balance to reinforce orientation. When the roles are reversed, the new “teacher” has to recall “student” experiences to visualize and direct the new “student.” The student-teacher roles were very effective in developing attention and the ability to learn.

This is an example of only one of the procedures we utilized to develop movement for the development of vision, learning and intelligence. The sequence, beyond trial and error learning, was a Plan to “Organize it, Visualize it, Verbalize it, Monitor the Act, Analyze the Plan and then Act.”

The last week of the program was post-evaluations and parent conferences. Results of the program were dramatic in development of bilaterality, binocularity, attention, and motivation, similar to the results of the Glen Haven Achievement Camp ten years earlier.

The parents of the children were unhappy that the program had to end. They wanted a continuation beyond the summer. After advising them to negotiate with Barry College, I had to return to my practice in Pueblo, Colorado.
The Learning Disabilities Foundation (LDF)

Similar to the history of the Glen Haven Achievement Camp for Retarded Children, the parents of the children who attended the summer program at Barry College in Florida established an not-profit foundation in the fall of 1968, under the name of Learning Disabilities Foundation (LDF). The foundation’s purpose was to continue the summer program by establishing an after school program on Barry College campus.

In addition, LDF sponsored “chair” for a professor to start a graduate program for the study of child development. This program would be open to educators and all related disciplines for the study of child development and was scheduled for the fall semester of 1969.

After months of negotiations, this author agreed to a part-time, temporary position as Director of the program for the children. There were many flights between Pueblo and Miami in order to maintain our optometric practice and oversee the staff and to continue to develop the program. After several months of searching, a satisfactory replacement was not found for the position of Director. During these months, the progress of the children in the program was exceptional and the parents were eager for it to continue. As a result, I sold my share of the Pueblo practice to my partner and our family moved to Miami Beach.

By the end of the summer of 1969, in addition to being full time Director of the LDF program for the children, I accepted the position of professor of graduate level classes on Child Development at Barry College. The Child Development classes were attended by educators, psychologists, a few medical doctors and, of course, doctors of optometry. The after school program for the children expanded greatly with the children continuing to show progress.

As the program attained more and more recognition, many optometrists visited us. Among the visitors were Drs. A.M. Skeffington, G.N. Getman, Bob Kraskin, Larry Macdonald, Bruce Wolff, Harry Wachs and many more of our colleagues. We also received visits from many psychologists, educators, medical doctors and other disciplines. Among those who came were Drs. Alan Cott and Darrel Boyd Harmon. Both were impressed with the program and wished to be involved in some way.

Dr. Cott, was a psychiatrist from New York who was involved in orthomolecular research, working on an international level. He believed in using supplements to treat his patients rather than drugs and had much success with this approach. After observing our program, he felt that the use of vitamins would give additional support to the progress of the children. When Dr. Harmon heard of this he wanted to be involved.

It was decided to do a double blind study to be able to weigh the results on a more scientific basis. The Miami Heart Research Institute on Miami Beach was contacted and they agreed to be involved in the study. Dr. Cott volunteered to obtain the necessary vitamin supplements and the placebo.

The children in the Barry program were divided into equal groups, by age, sex, and degree of development. A biochemical evaluation was done for each child to determined biochemical balances and/or imbalances. A new evaluation of their current development in MindBody control of movement and their visual abilities was conducted and then a new program was developed for each child. This gave a starting point to determine the progress made with and without the supplements at the end of the study.

The children in one group received the supplements as recommended by the biochemical analysis. The children of the second group received a placebo. All the children of both groups continued with their prescribed developmental programs during the 120 days of the study.

Re-evaluation of the biochemistry and the program development indicated benefits, with and without the support of the supplements. However, the study indicated a major improvement in development and learning of those children who received the supplements.

During the second 120 days of the study, supplements were given to the original placebo group and they continued their individual programs. The original supplement group was given the placebo. The results were much the same as the first part of the study. All the children benefited from their individual
Going Beyond the Behavioral Model

Dr. Elliott Forrest’s farewell message in his publication, “Going Beyond the Behavioral Model: A Challenge for the Future” asks: Are we the victims of our environment or do we create our own stress? And what can we do about it?”

The classical optometric model infers that we are victims of our genetic endowment, trauma, systemic or ocular disease, age-related ocular changes and metabolic biochemical abnormalities. The behavioral optometric model infers that we are victims of developmental lags and deprivations aggravated by parents and guardians who may not guide a child properly through the key developmental stages.

Some schools and teachers are insensitive to a child’s physiological, psychological or perceptual readiness, particular learning style and classroom seating. They do not understand that improper lighting can induce poor posture, or that poor eating habits can result in possible nutritional imbalances. Culturally applied pressures for achievement and imposed stresses of near work with all containment factors can cause stress. Parents who do not have their child’s vision evaluated by a behavioral optometrist, or by an optometrist who prescribes appropriate stress reducing near plus lenses and visual training programs, also add to this stress.

Elliot believed that, regardless of apparent successes, using the traditional behavioral approach alone may not be the major solution to understanding and treating the visual problem that we think it is. But, it may be a major part of the problem by reinforcing the perception that the patients are victims with all the psychological, physiological visual repercussions that this attitude fosters. In the clinical management of visual therapy patients, considering the existence of emotional and attitudinal factors that are often revealed would be both sympathetic and supportive of the need for a paradigm shift.

The classical and behavioral models are actually similar in the way they relate individuals to the etiology of their visual problems. Each model stresses different causative factors, but both treat the person in the same manner—as a victim of forces not easily controlled by the person him/herself.

Elliot was a committed, behavioral optometrist who personally struggled, for many years, with the pros and cons of the behavioral concept as a victim hypothesis. He resolved his dilemma with a psycho-behavioral philosophy. It does not reject the behavioral or classical concepts, but it does shift the frame of reference to indicate the “primacy” of mental states in the process of vision and visual stress responses.

The psycho-behavioral approach leans to the theory that stress is not caused by the actions of the stressors (e.g. reading act), but how one reacts to those stressors. In effect, we create the stress. The stress is us. We construct our own world and then react and respond to our own construction.

If visual therapy is to be long lasting and not just a temporary palliative, which simply trains skills, it should also aim at getting behind the reason for the initial compensation...
and demonstrate to the patient that the compensation may be a detriment. Then, it is essential to get behind the mechanics of the visual problem and emphasize the major properties of mental states, awareness, attention, responsibility and decision making.

Dr. A.M. Skeffington taught the tenet that “vision is dominant.” Some seem operationally to have translated that statement into “vision is all.” The psycho-behavioral approach to vision holds that visual status reflects different levels of consciousness and mental states. The aim of the psycho-behavior approach has been to highlight an inadequacy in the behavioral model and suggests, at least, an approach to resolve the problem and go beyond it.

Elliot Forrest suggests that the role of the clinician is not simply to remediate the ocular and ocularmotor deficits, but to influence and modify the behaviors and attitudes which may be the underlying causative factors which foster the deficits. His book, Stress and Vision, presents not simply a philosophy of vision care, but a philosophy of life itself. (Elliot extended his life many years beyond medical expectancy with this philosophy.) I recommend studying Elliot Forrest’s Stress and Vision (Chapter 29-Beyond Traditional Optometry) for guidance of future clinical applications.

**Imagery and Vision**

Dr. Elliott Forrest was always interested in the relationship of vision to learning and achievement.

At the Developmental Vision Clinic of the New York Optometric Center, he evaluated non-readers (5th graders reading at pre-primer levels) who passed every optometric test. With developmental vision therapy programs, some made tremendous gains in certain areas, but no gains in other areas.

In his search for answers, Elliott learned that:

1. In normal functioning individuals, the visual component involves some degree of imagery, unrecognized or inefficiently utilized, by the individual, and
2. True visual imagery is an integral factor in developing reading and spelling.

True visual thinking involves dynamic imagery; the ability to self-generate, manipulate, control, move and change images. The prime cause of poor imagery and utilization is high internal verbalization. Through inner talk, one builds an intellectual wall between oneself and the ability to develop visual imagery. Internal tension and internal chatter suppress and repress imagery.

Elliott’s binocularity research revealed relationships with imagery. Improved divergence ability improved imagery ability and improved imagery improved divergence and both improved spelling abilities (other than memorization with rote verbalization spellers). In binocularity training, relaxation relates to divergence ability, which is difficult for some. Divergence skill is directly related to the ability to fantasize, to make believe, to “let go” of embedded concepts, to imagine, and to look beyond or through established positions or thoughts.

In 1986, Elliott presented “Visual Imagery And The Plateau Spiral In Myopia Control” at the 31st Skeffington Symposium. He demonstrated how vision serves the mind.

The following 4 steps are a brief condensation:
Our Optometric Heritage...

**First Stage**

a. Without Rx, myopic patient reads, comfortably, lowest Snellen line possible.

b. Patient views plateau spiral at 16 to 30 inches depending on spiral size.

c. For 60 to 90 seconds, spiral slowly rotates inward as patient experiences a time tunnel.

**Second Stage**

a. Patient views non-rotating spiral, mentally follows the spiral lines inward, “imagines” rotation into tunnel.

b. After-effect is achieved and maintained as long as possible.

**Third Stage, Visual Imagery:**

a. Patient sits with eyes closed.

b. Pictures airplane flying forward and then backwards, a chair, a cat, and then the cat jumping onto the chair, etc.

c. This reveals patient’s ability to generate static and action visual imagery.

**Last Stage**

a. Patient practices visualizing rotating spiral while viewing Snellen chart.

b. Decrease the visualized spiral time as after-effect is increased.

c. With skill, practice open eye imagery while viewing TV, chalkboard, clocks, street signs – anywhere, any time. Some patients are able to self-generate the visual imagery after-effect without the need for the spiral stage.

Imagery is the primary language of communication. We learn to communicate in picture-language throughout infancy, a time when learning is at its height, long before language development. Night time imagery appears to be a major function of sleep is important in learning and in health.

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**The Holistic Concepts of Developmental Optometry**

The tributes to Dr. Amorita Treganza, published in the Journals of COVD and OEP, are beautiful offerings to a great lady of optometry. She lived her life in accordance with her name, Amorita, “to give love” from her heart. But she also filled her life by dedicating her mind to spreading knowledge.

I met Amorita in 1950 at the OEP sponsored Ohio State meeting and later in the 1950’s during my first San Jose seminar. In 1963, we worked together to make an OEP 33 1/3 RPM record, “Examination of the 6 year old.” We actually were involved in the Developmental Optometry movement that spread across the country.

In 1976-80, Dr. Amorita Treganza and Dr. Robert M. Wold co-authored the OEP series, “Optometric Evaluation of Children with Academic Dysfunction.” Their introduction presented the optometric concepts that resulted from the Gesell study, published in 1949. The following introduction statements express the concepts very clearly.

Severe reading disability is due to a lag in the maturational process of the cerebral cortex….We must not forget that a child profits from an experience of a learning task according to the magnitude of his primary experience….Teachers do not teach children anything.
Teachers arrange conditions and situations so that the child can bring what he already knows and the abilities he already possesses to the learning opportunity. The same premise holds true in any vision therapy program. With a thorough knowledge of child development and the appropriate use of optometric probes, we as optometrist, have a vital role to serve in the interdisciplinary field of learning disabilities. With our background in physiological optics and behavioral optometry, we have a key role in the detection and prevention of high risk children before they become academic failures.

In evaluating infants, Drs. Treganza and Wold found that “a combination of reflex testing and the Denver Developmental screening Test to be very useful”. In addition to these tests, they correlated many developmental scales to determine the expected developmental levels from age one month to five years as readiness for academic learning. They expressed the attitudes of the many Developmental Optometrists who were influenced in the 1950’s and 60’s by the Gesell research and the OEP Getman seminars and publications.

The following is their clear expression of holistic vision care:

We must keep in mind that this series relates to children and adults who are not achieving to their potential. When we see such a patient, we must evaluate, not only his visual status but also explore the relationship of concomitant dysfunction, be they developmental, neurological, medical, auditory, etc....The first step in awareness of the underlying factors is a thorough knowledge of child development. To know where a patient is at the present time, we must know the developmental phases through which he has passed....We should not have to wait for a child to fail in school before we intervene. This can be done through knowledge of the developmental sequences through which the child is expected to pass....It is very apparent that the child’s whole life is dependent upon preschool development. Any early preschool internal or external disruption or disturbance can affect negatively later intellectual development. Conversely, an enriched, controlled environment can enhance the preschool child’s later intellectual development.”

This OEP series of Drs. Amorita Treganza and Robert Wold gives us an opportunity to review the holistic concepts of Developmental Optometry which brought recognition from professionals and the public to optometry as a unique profession. The emphasis of the Developmental Optometrist was to provide the patient with the assurance that their doctor would look for and treat the underlying causative factors of the learning and/or visual problems.

“With a thorough knowledge of child development and the appropriate use of optometric probes, we as optometrist, have a vital role to serve in the interdisciplinary field of learning disabilities.”

Drs. Amorita Treganza & Robert Wold
Our Optometric Heritage...

The success of Amorita and Bob were great demonstrations of caring for the whole person which provided solutions to the manifested visual compensations. After all, the major purpose of “Our Optometric Heritage” is to provide knowledge about those optometrists who worked to develop Optometry as a unique profession. We are responsible for sharing that knowledge so that their contributions will not be lost and their optometric careers will not be in vain.

We always shall be grateful for the legacy we have received from Amorita and Bob. We miss them and we will never forget them because of their contributions to our optometric heritage.

A Lifetime of Dedication

Dr. Robert Wold spent a lifetime of dedication to Optometry. Dr. Nancy Torgerson described his dedication with the following beautiful thoughts: “He loved Optometry. It was his passion, his way to make a living and COVD was his way of giving. As a tireless worker, he found the secret of predicting the future. He created it.”

Dr. Wold received his Doctor of Optometry degree (1964) and an M.S. in Physiological Optics (1966) from Pacific University. After four years in private practice in Los Altos, California, he joined a group practice in Chula Vista, California, in 1969.

During that period, Developmental Optometry was at its peak of growth and California was the center for that movement. The OEP office was moved from Oklahoma to California where Drs. Alexander, Skeffington and the OEP Board developed plans for the growth of study groups, congresses and research. Dr. Getman moved to California to guide the OEP section of Child Vision Care with Dr. Homer Hendrickson. The aim was for the expansion of Developmental Optometry.

Dr. Wold was caught up in the enthusiasm and excitement along with his colleagues. His interest and knowledge grew rapidly through his study group and the many congresses he attended. This knowledge led to the rapid growth of his practice. Bob’s wife, Margery, was a partner in his optometric commitments. They became a dynamic team in Developmental Optometry.

In March, 1971, Dr. Wold, with other interested optometrists, founded the College of Optometrists in Vision Development, COVD. Its purpose was for the official certification of optometric abilities. Bob was elected as the first secretary and remained in that position for 28 years. At the end of that period he served as president of COVD until his death in July, 2001.

Dr. Robert Wold’s contributions to our optometric heritage were the result of his dedication to “Optometric Evaluations of Children with Academic Dysfunction”. From October 1996, through September, 1980, he co-authored an OEP series with Amorita Treganza, O.D., that gave insight to the evaluation of the child.

In addition, he compiled an OEP publication that contained additional tests to be used in optometric evaluations that were related to academic dysfunction. This publication described each test, gave the age expecteds and showed actual copies of Dr. Robert Wold and his wife Margery made a “dynamic team”.
Our Optometric Heritage...

The Rekindling of Our Optometric Heritage

The spirit of our optometric heritage was re-kindled at the 31st Annual Meeting of the College of Optometrists in Vision Development in St. Louis. That wonderful spirit we founded almost 100 years ago based on dedication, love and caring for people holistically. Those feelings were openly demonstrated at the small, but growing optometric gathering with enthusiastic conversations about families, patients, and especially ideas. Those ideas were about unique changes beyond the classical ocular care of the period.

At first, the groups were made up of two or three optometrists who shared what they had heard or read. But, the ideas and the camaraderie increased rapidly.

In 1924, Dr. A.M. Skeffington started traveling to meet with groups throughout the country. Each meeting established new friendships, as well as new ideas from the lectures he presented. Quite often, Skeff would visit at one of the doctor’s homes and meet their families. This pattern gradually became a standard operating procedure of Skeff’s as the gatherings grew to state meetings and OEP Congresses.

Dr. Wold analyzed the skills necessary for improvement in children with academic dysfunction. The test results gave Dr. Wold the necessary information to plan and prescribe programs of visual therapy and learning development. Dr. Wold gave optometrists these tests that are still being used to guide us as they guided him to help children with academic dysfunction.

Dr. Bob Wold and his wife Marge were very dedicated to providing visual development for children in academic programs. Marge continues the “Wold Commitment” by working in school programs.

The best part was that, across the country, these warm feelings were carried into offices and became part of the unique care given to patients. This unique visual care that patients were receiving was beyond glasses and visual acuity. It involved mental activities of movements and judgments. Dr. George Crow in California, the originator of visual training, prescribed cattle roping and round-up with and without glasses. Dr. Jerry Getman, in Minnesota, prescribed creeping and crawling. And all involved feelings of love, caring, and touch.

Arriving in St. Louis for this year’s COVD meeting, it seemed that there were more hugs and kisses than I can recall witnessing for a very long time. Many at the meeting showed a genuine COVD family concern.

At the Awards Luncheon, when the Robert and Margery Wold Heritage Award was given, I was overwhelmed with emotion to be the first recipient of this newly and well-named award. The award represents the dedication and love of Bob and Margery...
Our Optometric Heritage...

Wold, two great people who knew how to give of themselves with caring and love to help others. As a team, Bob and Marge lived COVD in their home, in their practice and as a guiding force, which helped our organization mature into an internationally recognized organization with a single purpose, to help people.

Since the first COVD Annual Meeting in New Orleans, Bob and Marge performed the roles of host and hostess, welcoming every registrant with a big smile, an embrace, food and drinks. After each banquet, they arranged a sing-a-long -- I was proud to be an integral part of this event. They brought love and happiness to the COVD meetings.

With the complete cooperation of the COVD Board, Dr. Nancy Torgerson was instrumental in preparing the banquet program for this year’s meeting. Dr. Michael Phillips’ invocation set the stage for what proved to be an emotional and wonderful evening of togetherness. Nancy presented a special pictorial tribute to COVD president Dr. Robert Wold, who passed away in July of 2001. This tribute of his years of dedicated service to COVD was developed and recorded on CD-ROM by Nancy and her husband. It is a beautiful expression of love portraying Dr. Wold and past-presidents, past-officers and members of COVD in memorable experiences. This tribute is a remarkable accomplishment of skill and feeling.

In her presidential address, Nancy expressed her dedication and feelings for Optometry by stating, “I have a dream that vision therapy will no longer be the best kept secret and that thousands of children will receive the optometric care they need.” Her address was emotional and stirring. At the end, she asked everyone to rise to their feet, hold hands, form an endless chain of people, and sing with expression about their dedication. That remarkable picture of love, caring and dedication will live in our memories. It was the exciting rekindling of our optometric heritage.

“I have a dream that vision therapy will no longer be the best kept secret and that thousands of children will receive the optometric care they need.”