

INTERVIEW WITH DR. GLENN FRY

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Dr. Good: Dr. Fry, I understand that one of the major interests in your early years was art. How then did you become interested in optics?

Dr. Fry: I cannot remember a time when I was not interested in drawing and painting. My mother was a talented person and painted many pictures which decorated our home. In everyway she encouraged me to pursue my efforts in drawing and painting. She was not a teacher herself but kept me enrolled in art classes at Limestone and Converse College where I learned to do charcoal and pastel, watercolor and oil color and pen and ink works of art. I also had a correspondence course, which introduced me to aerial and geometric perspective. At the age of ten and eleven, I spent a couple of years with my grandparents who owned a stereoscope and a set of stereograms. But it was not until I started writing a Master's Thesis that I probed into and understood the mechanisms involved in stereopsis. In my early years I knew nothing about Seurat and Van Gogh, but by using colored crayons I developed my own technique of adjacent lines of different colors and interspersed dots of different colors. By the time I entered college, I knew all the arts of mixing colors, transparent and opaque, but it was not until I took courses in physics and optics that I understood what was involved. All of my interests in the sensory and perceptual mechanisms can be traced back to my early interests in art.

Dr. Good: Did you enter college with the thought of majoring in art?

Dr. Fry: When I entered Davidson College I had the idea of being a ministerial student and going on to Davidson College to a theological seminary. During my stay at Davidson

I was interested in physics and math and I became definitely interested in psychology and philosophy. I took a double honors program in philosophy and psychology. At the end of my stay at Davidson I was offered a scholarship to come to Duke University to study under Professor William MacDougal and that decided my switch from a program in theology to a program in psychology.

Dr. Good: Dr. Fry who were the people important to you in your undergraduate, graduate and post-graduate education?

Dr. Fry: At the undergraduate level Professor Foreman and Professor Hood at Davidson College were my advisors for my honors programs in philosophy and psychology; these two men had a very profound influence on my future. Dr. Harding, a professor of Greek at Davidson College also had an influence because it was under him that I developed an interest in linguistics and when I came to graduate school I roomed with a Davidson Graduate who had specialized in this area. Although I have never achieved anything in this particular area myself, I have always had a profound interest in it. When I came to Duke University I had the great privilege of having William MacDougal as my graduate advisor. He in particular got me interested in Mach Bands and binocular rivalry of colors and responses to flashes and intermittent stimuli. Dr. Carl Zener was the man from whom I learned systematically about experimental psychology. At the completion of my graduate program, I was awarded a National Research Council Fellowship. The original intent was to work with Leonard T. Troland, but on the very day that I heard from him of my acceptance in his program he fell of a cliff at Mt. Wilson and was killed. This made me switch to Washington University where I came under the influence of three men: my immediate supervisor was Percy Cobb who was a physician

but he had had a career in illuminating engineering at Nela Park and was connected with the Department of Ophthalmology at Washington University. The second man at Washington University was George Bishop. He was a nerve physiologist. He had working under him Dr. Howard Bartley who was also a National Research Council Fellow. It was under these two men that I learned all that I know about electro-physiology and was able to participate in this field to the extent of completing two joint papers with Dr. Bartley. Shortly after I had come to The Ohio State University, I made my first visit to Dartmouth College where I fell under the influence of the men associated with the Dartmouth Eye Institute. To be particular, Dr. Kenneth Ogle and Adelbert Ames. This connection led into an interest in aniseikonia and a good bit of my career in space perception can be traced back to this early interest. Another person who had a profound influence on me was Charles Bridgeman who came into the Optometry Program at The Ohio State University. Dr. Bridgeman had come from Carmichael's Lab and his close association with K.U. Smith introduced me to many important things in the field of psychology related to vision.

Dr. Good: Dr. Fry, you mentioned you did undergraduate work at Davidson College and graduate work at Duke University and were eventually a National Research Fellow at Washington University. How then did you eventually come to Ohio State?

Dr. Fry: At this stage in my career I had to look around for permanent employment. I gave a paper at the Midwestern Psychological Association in Ames, Iowa, and at that meeting I met Professor Renshaw who had been asked by Dr. Alpheus Smith, the chairman of the Physics Department, to see if he could locate somebody who would be appropriate for helping out with the Program in Applied Optics at Ohio State. This led to

a visit to Ohio State for an interview with Dr. Smith, which was administered in the Physics Department. I was apparently successful in persuading him that I was qualified to help out with his program in applied optics and the situation was complicated by the fact that at the time I was expected to teach only courses in psychological optics, which I felt qualified to do. But in between my acceptance of the position and actually coming to Ohio State, Dr. Clarence Ellis who was head of the clinical program had to move out west on account of his illness. And this threw me in the position of taking on the responsibility of managing the day-by-day affairs of the entire program in applied optics.

Dr. Good: Dr. Fry, what was the status of the optometry program upon your arrival?

Dr. Fry: The optometry program was referred to as applied optics and it was managed through the Department of Physics and the College of Engineering. Dr. Smith in the Department of Physics had been asked to be responsible for the development of the program and he introduced a sequence of changes during my early stay at The Ohio State University. One of the changes was to designate the courses as courses in optometry rather than courses in applied optics and the second one was to switch the management from the College of Engineering to the College of Arts and Sciences. It was about this time that the school was first referred to as the School of Optometry and I was referred to as the director. It was not an ordinary school and my position as a director was not equivalent to the director of other schools on the campus. I still reported to Dr. Alpheus Smith who was chairman of the Department of Physics. It was rather unique to have a school develop as a part of a department. This situation continued until about 1951 when the School of Optometry was taken out of the Physics Department and placed directly under the College of Arts and Sciences. It then had a status equivalent to that of the

School of Journalism. It was at that time that I suppose that we should say that the school was officially introduced although it had existed in a different sense for many years prior to that.

Dr. Good: Who were the important individuals involved in developing the early program at Ohio State?

Dr. Fry: Dr. Smith was the all-important person for the development of the program. He and I, working together, formulated plans but it was he who was able to implement these plans. The people who were working with me in the field of clinical optometry were Howard Haines, Ellsworth Reese, and Herbert Mote who remained the mainstays of our clinical program for many, many years. We brought into our program Charles Bridgeman, a psychologist from the University of Rochester and a little later Fred Paul, who was a physicist. These were the men who were selected by Dr. Smith and by me to build up our program of research.

Dr. Good: Dr. Fry, can you tell us about the beginning of the graduate program at Ohio State in Physiological Optics?

Dr. Fry: The thing that characterizes Dr. Alpheus Smith was his emphasis on research and graduate programs. He used to make the comment that if you wanted to know anything about the future of optometry you should ask the question, “What is its research program?” Very early he encouraged me to begin a program in graduate work in physiological optics. Physiological Optics was the term that was used for graduate programs in visual science in that era. The graduate programs at Dartmouth, for example, and at John Hopkins were all referred to as “physiological optics”. That term persists even today but I would predict that eventually it would give way to the expression “visual

science". We got started with our program on a very informal basis because several of our men wanted to engage in graduate work, in particular Dr. Howard Haines, Dr. Ellsworth Reese, and Dr. Herbert Mote elected to go ahead with a Master's Degree program in physiological optics and this really represented the beginning. Sometime later the graduate program in physiological optics was recognized by the Graduate School as a separate program in the Department of Physics. This actually represented the beginning of our graduate program, that is, the adoption of our graduate program by the Graduate School. I should say that in addition to Dr. Smith there was another man who had a great influence at that early period. He was Dr. Charles Sheard who had been the founder of the school and had gone on to the American Optical Company and finally to the Mayo Clinic. He had a profound influence in many ways, that is, he had a personal interest in the subject matter that was being researched at Ohio State. As a matter of fact he had been responsible during his stay at Ohio State for many publications in the field of research in vision. It was his encouragement and advice that led us into the development of a full fledged graduate program. He and Dean Smith, of course, were close friends for many years, and working together we conceived the idea of an institute for research in vision and it ultimately led to the development of the Institute for Research and Vision at The Ohio State University.

Dr. Good: You mentioned that you did become director of the optometry program and in fact served in that position for close to thirty years. Did you enjoy your years as the director?

Dr. Fry: My life during that period was thoroughly satisfying. I was never the kind to take enthusiasm about administering programs although I had to take on the

responsibility for managing and developing the programs in optometry at The Ohio State University. I think my greatest source of satisfaction came in connection with my research efforts. During the first part of my career at Ohio State I had broadened my interests in visual science to include the actual scientific basis for the practice of optometry and we got involved in studies of skiametry, visual acuity and other things. Professor Charles Sheard had been interested in relationships between accommodation and convergence and a good portion of my early career was devoted to the study of problems related to accommodation and convergence and a number of publications came out of this effort.

Dr. Good: Over your time as director you kept up an outstanding research and publishing record. Did you find it difficult to find time to do this along with your administrative duties?

Dr. Fry: The answer to this question is that I carried on about three careers at the same time; one was teaching, one was administration, and the other was research. This meant long hours. On many days I actually put in 16 to 18 hours of effort and that was actually how I was able to accomplish what I did.

Dr. Good: Over the years that you spent here at Ohio State we have had several significant advances of the program. Which do you consider the most important?

Dr. Fry: The most important advance was the introduction of the graduate program in physiological optics and this has since paid off because we have turned out a number of Ph. D's who have occupied important positions in the field of optometry. We have had a number of deans at other colleges and a number of significant researchers in the field of visual science and I am very pleased and proud of the outcome of these early efforts in

developing the program in physiological optics. Another phase of this was the development of the Institute for Research in Vision. This was a joint effort between optometry and ophthalmology. Professor Culler, chairman of the Department of Ophthalmology, and I served as Co-directors of the Institute for a number of years. We were able to develop a rapport between our departments and other departments in the University concerned with research in vision, namely psychology, physiology, physics, education, engineering, and fine arts. These were fine developments and I am very proud of them. Optometry should play a role in fostering interest in research in visual science, which is university wide. Optometry is an application of visual science, which deals with the clinical aspects of human vision, but vision has a much wider coverage and it is important for education, engineering, for fine arts and other areas in which visual science is applied. In order to meet its greatest fulfillment, optometry has to play an important role in fostering this kind of interdepartmental activity. I like to think that we demonstrated that it could be done. Unfortunately our Institute for Research in Vision has undergone many changes. Dr Blackwell was brought in to be a full time director and I turned over to him the responsibility for its development. I then devoted fulltime to administration and research in the School of Optometry. Another significant development was the development of our six-year program. Connected with that we made an effort to integrate our clinical program with that of the department of ophthalmology, it failed. There are many aspects of this integrated program, which need to be investigated further. There was, connected with the development of our six-year program, the offering have a Doctor of Optometry Degree and the adoption of the six-year program was concurrent with the offering of the O.D. degree. This has had many ramifications on the profession

of optometry because once we had taken this step the other university programs followed suit. The next advance occurred after I was no longer director of the school of optometry. The school became a college of Optometry. This came about mainly because the Arts College was broken up into a number of different colleges and it was appropriate at that time to move from the status of a school to a college.

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Dr. Good: You've mentioned several changes in the Optometry program here at Ohio State. Have any of these changes met with exceptional resistance at the university level?

Dr. Fry: The changes, which go back to our tenure in the physics department, were all achieved under the guidance and leadership of Dean Alpheus Smith and instead of resistance there was always encouragement to pursue the changes that were made. Dean Smith was also an important figure in the development of the Institute for Research in Vision. Later on after his retirement when we were involved in the establishment of our six-year program we had unusual support at all levels including President Fawcett who spent a good deal of time helping us struggle with our problems. The most important help came from Dean Fuller, Dean of the College of Arts and Sciences and from Vice-President Heimberger. I should mention also that one of the key figures, as a supporter of our program, was Dr. Harold Oyster, who was an optometrist. He had been president of the Ohio Optometric Association and had entered the legislature. He was chairman of the committee on education and was eventually head of the Board of Regents. In all of the steps he was always ready to advise and to encourage. A good deal of our success can be attributed to his interest and enthusiasm. We often ran into opposing points of view; however the responsible people with whom we had to deal would meet with us in order to

discuss our differences on a friendly basis. I am grateful to those who helped but have nothing but admiration for those who opposed us.

Dr. Good: Dr. Fry, over the years you have done research in many areas. What have been your primary interests?

Dr. Fry: It's difficult to answer this question because I was forced into situations where I had to do concentrated research on various topics. My most natural interest was that of visual science related to the sensory mechanisms, both binocular and monocular. This, as I explained earlier, can be related to my interest in art so that it is the most permanent, the most stable and most dominating interest that I have. And in my retirement I am continuing to be active in the field of research in color. I have been much less successful in this field because earlier I had made several important mistakes which identified me with theories of color vision that had gone by the board and I am working frantically at the present time to re-establish the importance of some of the things that I have achieved in this particular field. My most successful effort, I think, was research in the field of accommodation and convergence. Another area was in the optics of the eye and this continues to be a major interest.

Dr. Good: Although you have served on many national and international organizations, which areas have been the most satisfying?

Dr. Fry: I guess my greatest effort has been in connection with Illuminating Engineering. I have served on several important committees such as the committee on quantity and quality of illumination, which sets standards for illuminating engineering practice. I have also been on the committee of nomenclature and this is a very satisfying contribution in the sense that one can help determine the use of terms in the field of

visual science. Illuminating engineering also led into the performance at the international level in the C.I.E., that is, the International Commission of Illumination. In this area I could have pursued my major interest, that of color. But I was called upon to concentrate on discomfort glare and it is in this area that I developed my major reputation. There are other areas that I enjoyed being involved in. One was the Vision Committee of the National Academy of Science. I did serve on the executive committee of this organization and enjoyed many years of participation in various projects connected with the Vision Committee. I would like to add that my interests in these outside organizations like the Optical Society of America and Illuminating Engineering and so on, were stimulated by Alpheus Smith who felt that it was important to make contact with fields of effort outside of optometry. I think that this was a good decision and although optometry may have suffered from my participation in these other efforts, I think on the whole that I have been helpful.

Dr. Good: Dr. Fry, of the many awards that you have received through the years are you especially proud of one or two?

Dr. Fry: I hesitate to compare awards. I am deeply proud of each of the awards that I have received. Awards do differ in their significance but pride in the actual award is always overshadowed by pride in the achievements, which had to lead to these awards.

Dr. Good: Dr. Fry, you certainly have had a long and distinguished career here at Ohio State. Looking back, do you have any regrets?

Dr. Fry: My life at Ohio State has been thoroughly satisfying. My only regret is that I am running short of time and will not be able to complete the things that I started.

Dr. Good: Dr. Fry, as a final question, do you have any suggestions for the further development of the college?

Dr. Fry: I will prepare for you a separate written document "Suggestions for the Development of the College of Optometry". This will include suggestions about:

1. the revival of the Institute for Research in Vision, with research in eye diseases excluded as one of its major objectives
2. the establishment of a department of visual science (physiological optics) which will include among its assignments the management of the graduate program in physiological optics, the undergraduate courses in P.O. and the Institute for Research in Vision
3. the development of close ties with the work in Speech and Hearing
4. the maintenance of a strong program in corneal physiology in spite of the fact that it is not involved directly in the use of the eyes in seeing, and
5. the maintenance of an active program of interprofessional relations between optometry and ophthalmology. The aim should be to develop an integrated, effective program in eye care for the State of Ohio.