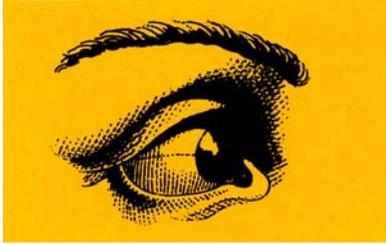


The Foundation of the American Academy of Ophthalmology
Museum of Vision & Ophthalmic Heritage

Conversation Between Burton Kushner, MD and Arthur Jampolsky, MD
San Antonio TX, March 24, 2012



Drs. Burton Kushner and Arthur Jampolsky recorded this conversation on March 24, 2012 during the Annual Meeting of the American Association for Pediatric Ophthalmology and Strabismus, in San Antonio, TX.



In this excerpt [Dr. Jampolsky](#) remembers a very unusual patient from his early years at Stanford University. (.mp3 file)

Here, [Drs. Kushner and Jampolsky](#) relate two stories about receiving and giving credit. The audio starts with Dr. Kushner speaking (.mp3 file)

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BURTON KUSHNER: I'm Burt Kushner.

ARTHUR JAMPOLSKY: I'm Art Jampolsky. Burt and I are old friends.

BURT: Prior to now, at least. Okay. Well, Art, why don't we start off with me just asking you what factors influenced your decision to go into medicine and ophthalmology, in particular, and drilling down even more specifically, into becoming a strabismus specialist? Are there any family connections to medicine or ophthalmology that may have influenced this for you?

ART: Well, I'll do that in reverse very, very rapidly. No, there's no family at all history. My father was a small businessman, my mother was a housewife, and nobody...no relatives...no anybody in any profession. My father was born in Russia. My mother was born in England.

What got my interest? I got my eyes examined in college at University of California at Berkeley. And I was interested in optics, I always fooled around with things when I was a kid, optics, crystal sets and things of that sort. And I liked the field of optometry so I finished the school of optometry, learned about optics and binocular vision there. And during that time, a little grandfatherly guy said, "Art, why don't you do medicine as a doctor?" And that did it.

How about yourself?

BURT: Well, my story was a little different. My father was a physician, and I grew up in a family where I think I was destined to be a physician sometime before I was conceived. Becoming a physician was a strong ethos in my family. My father was born in Russia, and he came over to this country when he was about 12, never having gone to school for even a day, didn't speak English, and was put in kindergarten. He went to one of these progressive schools, where you can progress at your own rate, and in two

years he had a high school diploma. He worked his way through medical school during the depression, and really valued what medicine did for him, for his life, and in a way he was a role model for me.

When I was in medical school, I realized that, number one, I wanted to do something that involved performing delicate surgery. I had done a research project in which I was operating under a microscope, actually cannulating the thoracic ducts in rats. So I knew I wanted to do delicate surgery. Also, what was really very important to me was to enter a field in which I had long-term contact with patients. In many surgical fields, the patient comes in, you operate on them, and they're gone. As it turned out, one of the things I valued the most in my career is having the same patients in my life and me in their lives for what is now 30 to 35 years or more. Ophthalmology, of course, has the equivalent of a yearly exam, and people stay with their eye doctor hopefully for a long time. I also wanted a field in which I wasn't limited to just caring for just men or just women, just adults or just children, although, interestingly, I ended up in pediatric ophthalmology. But with the way my practice evolved and focused on adult strabismus I closed that circle and had both the adults and children in my practice. And that's how I came to ophthalmology, and specifically pediatric ophthalmology and strabismus.

Art...

ART: Well, I'll ask you one. If you didn't become a physician, or specifically an ophthalmologist, what would you have done?

BURT: You know, I think that my heart and soul is that of a politically active folk singer. The reality is I can't carry a tune, I don't understand music, I can't play a musical instrument, and they always had me in the lip-synching part of the choir when I was in school, so I figured that was out. Probably if I could not have been a folk singer, I would have been some type of academic, most likely a philosopher, something where I would be able to try and think great thoughts and be a teacher.

A question for you, Art: starting practice—what are your memories of how it was when you started practice? Any early memories from then?

ART: Mostly traumatic ones! [Laughter] I started in practice with Hans Barkan who was a professor at Stanford Ophthalmology, and that was a wonderful experience. He was a unique...a very unique person. And I guess in about the third month, I did the usual things, you know, sweeping the floors, doing refractions and whatnot. I had my optometric degree and did a lot of stuff. But I had very few patients, obviously, just those that came into the office. It was a large practice. And one day, the dean's wife, the dean of the medical school at Stanford, his wife, scheduled an appointment with me. And I thought, "Well, this must have been a mistake. They should have scheduled it with Dr. Barkan." But, no, they scheduled it with me. I said, "Well, goodness. She must have met me at some party and was thrilled with my character and my personality, and I was 'in' sooner than I thought!" And sure enough, she came to the office all dolled up, and had a little puppy with her. She came in and introduced herself. And I asked if she perhaps didn't want to, you know, have the nurses take care of the puppy, it would be difficult to put her in the chair, etc. Or perhaps tied up at the nurses station... "No, no," she said, "actually, I came in to have you see his eyes!" And I still remember it today. My ego hissed out of me and it deflated. I'll never forget that one.

How about your experiences?

BURT: Well, I have some fairly distinct memories. I think the biggest thing that surprised me when I went into practice was all of a sudden I was getting paid for what I had been doing right along for no charge. As an intern, as a resident, you take call, you care for patients, and that's just part of what you do, and you enjoy doing it, and I enjoyed doing it. And then it was a very strange disconnect when, all of a sudden, I am...back in the old days, where you would write a little charge on a patient's bill. That was a really very salient thing that I kind of wasn't prepared for.

I also...I have a very distinct memory of the very first patient that I saw in practice. And there were some interesting aspects to this. I used to have a Monday morning clinic when I started at the university. On my first day in practice, that was September of 1974, I got to clinic half-an-hour early to be sure I knew how to turn the light switches on and see where the equipment was. And...so I'm there half-an-hour before clinic is supposed to start, and John Opitz, who was our geneticist, a very well-known geneticist, walks into

the clinic carrying this little six-month-old or one-year-old somewhat dysmorphic boy, and says would I mind taking a look at him. And he was the first patient that I saw.

He actually ended up being the first patient that I operated on also, because he had a very severe bilateral ptosis, and I thought his lids needed to be raised. What I remember is that when I joined the department, operating room time was in as short supply then as it seems to be now. And my chairman, who I think was a little shortsighted in this regard said, “Well, you don’t need a regular operating day until you get busy.” We’ll just have you fill in with what they used to call E cases, which...in our hospital, which stood for ‘extra.’ That meant you wouldn’t be given an assigned time. E cases would be operated on when the regularly scheduled patients were done with surgery. So I’d schedule my patients for surgery and they...this was before we were doing things outpatient...they would be admitted, and they would be put on as an E case, meaning they would get to them sooner or later.

So he was my first patient in the office, and my first patient to have surgery, which was to be a few weeks later. I admit him and the morning goes by and I don’t start the case, and the afternoon goes by and I still don’t start the case. Meanwhile, this roughly one-year-old child has been NPO since the night before. And about 8 at night anesthesia says, “Well, we think we’re ready to go.” Then they come and say, “You know, this child is dehydrated. He’s been NPO for almost 24 hours,” and they wanted to cancel him. His mother had a fit, and I had a fit. But somehow they got him hydrated, and I wound up doing his surgery. I still care for him. He’s almost 40 years old now. Every year when he comes in—he’s developmentally delayed so he comes in with his mother, we always reminisce about that first day in the operating room for me.

There is one thing I’m curious about, Art, you’ve obviously had an amazing academic career, combining academics, research, and teaching. What influenced you to go that route rather than any other route with respect to the style of your practice?

ART: Well, may I...may I change your question a bit, Burt? You used the work “academic.” I’m not in academia. That’s important. I didn’t want to be

in academia. As somebody once said, “I’d like to always live my life honestly!” [Laughter]

BURT: Where did you go wrong? [Laughter]

ART: But I certainly did... I turned away from academia very early, and... I’m much too independent to tolerate academia or the Army. I wanted to do my thing my way. And teaching was always number one, and research, number one, also. And I decided I wanted to continue that, and to continue that you had to march off on your own drum beat. And Dr. Barkan, Hans Barkan, who was my professor at Stanford, and a wonderful man, sort of started people on their road at a time when fellowship programs were not there—he put Bob Schaffer on the road to go away to study glaucoma and he became a world expert. Max Fine, “go away to study cornea” and he became a world expert. Dohrmann Pischel, “go back to Vienna, and other places, study retina” and he became a world expert. Well, I won’t make that analogy to me, but he encouraged me, since I was the bachelor at the time in the office and doing research on the weekends, and he said, “Art, you’re never going to be happy until you do research.” And he cleared the way for me. He said, “Why don’t you take a year off and go visit a few places, etc., and when you come back, you’ll have your place in the office,” which I did. And there were no fellowships at the time. So I went to the Karolinska Institutet¹ for a while. And studied in most places—South America, France...I took some time to study in England, of course, in orthoptics, and also in New York and Boston. So I spent a couple of years doing that. And he was the one who really encouraged me to do it, and do it independently. So first I was at Stanford and then I was independent.

ART: What’s been, Burt, your biggest surprise since you’re starting practice? What’s been the biggest disappointment and the biggest challenge?

BURT: The biggest surprise and biggest disappointment—two different things, really, so I’ll take them one at a time. I think that the biggest surprise that I had occurred when I went into practice, I had then and have always subsequently had a very, very strong commitment to caring for the patient—the patient’s experience. I value myself as a teacher, I value myself as a researcher, but I think that certainly equally if not more important is the way

¹ Karolinska Institutet, Sweden

I related to the patient, the way I explain things to the patient, and the perception that the patient has after they've seen me of my having fulfilled their needs and their desires. Hopefully, they will think I gave them good care. So I sort of formulated this modus of how I explain things. I think that I value myself as being fairly good at explaining things, putting complicated material in simple form, but what really surprised me the most was that it's not a one-size-fits-all. What works for one patient doesn't work for another patient. And Madison, where I practice, Madison, Wisconsin, which is a university town, has a very large percentage of intelligent consumers of medicine, but also all demographics represented. And I rapidly learned that what works for some patients doesn't work for others. When I can go into my explanation of how strabismus surgery is going to work or why glasses will straighten the eye there's the patient that really understands what I say and is very appreciative of it. But there are also the ones for whom it goes right over their head. I wasn't expecting that to be the case, and I think that what I've learned out of that surprise is that the patient-doctor interaction is sort of a...it's like a dance. You kind of make a step forward and you see how it's received, and you have to read the patient,—read the patient, read their facial expression, and their energy. You need to know when you're talking over them or down to them or under them or around them. I think that probably is the biggest surprise that I had.

The biggest disappointment: I think my career has been fabulous and still is, and I wouldn't trade it for anything, but I think that some of the institutionalization that has gone on are things I really lament about. The various rules that we have, and the various hoops we have to jump through. We no longer just have to give patients good care, but we have to have been sure to write down nine criteria on the exam sheet in order for it to be credited. Issues like that detract from what we should be thinking about. I believe that things like HIPAA, which even though I'm a very, very strong patient advocate, and really feel HIPAA grew out of prior abuses, went too far. I think that now in order to do a simple retrospective type of anonymous chart review you have to jump through so many hoops. Many times now investigators feel it's just not worth it. So I think some of those changes are a big disappointment to me.

I remember when I first went into practice, and many people don't know this—I also have not been a full-time academic until relatively late in my career,

I started half-time at a university and half-time in a private group. When I joined this private group there were 12 ophthalmologists in it, We had one person, a woman named Bernie Post, who spent 50% of her time scheduling surgery and 50% of her time doing all the insurance and billing for this 12-doctor practice— one 50% time person. When I left that practice maybe 20 years later, there were 18 doctors, and at that time there were eight people working full-time just doing insurance, billing, and coding. I think that just speaks for a real movement in the wrong direction.

So your's was a question with multiple parts, and that's how I would answer each of them.

How about you, same question— your biggest surprise and biggest disappointment, as well as challenge?

ART: Well, you covered the patient relationship thoroughly and nicely, very nicely, and that's where it's all at. I mean, when I first started in practice, as I say, I was doing the menial things. Hans Barkan² had a patient who had beginning macular disease. They brought him in very enthusiastically as if it were the first one he had ever seen in my office, and said would I take a field, etc., as if it was something great. And it was just another darned field. What was it going to tell him? He knew exactly how it began and what's going to happen next week and next month and what the end result would be. And why all the enthusiasm? Every day we had a luncheon date in his office at 3:15. It was a standing coffee date, where the secretaries got their heads chopped off if they didn't leave 15 or 20 minutes for Barkan and me to chat, and it was one of the nicest things he could possible do for me. And we chatted about various things, and I asked him, "How come you were so enthused about that patient? You knew exactly what was going to happen, and whether the field was 5 degrees or 10 degrees at this point wasn't going to change your treatment,"—at least at that time. "Why were you so enthusiastic to bring me in for that field?" He quietly blew a smoke ring, which was his way, a perfect smoke ring, and said, "Art, after 20- or 30 years, it's not the disease at all. It's just the patients." And I think that says it all.

² Hans Barkan, MD was Chief of Stanford Ophthalmology 1925-1950

The biggest disappointment? I avoided the disappointments, and I didn't go to academia. I did it my way, and had some nice relationships with people, ophthalmologists, and it worked out very well.

You just related to me that you left a practice, a busy practice of some sort and went into an academic institution—right?—with all of its restrictions and constraints and whatnot. And so I'm not sure why you really did that. Why don't you be a freelance person, also? There's an old saying, one of my board members at the Smith-Kettlewell Institute told me, he said, "You know, in business, it's dog eat dog. In academia it's just the reverse!"
[Laughter]

What do you think of that?

BURT: Well, you did throw that question back, why did I make that change? I'll address that. Because to be honest, I never thought that I would make that change. I had...it's a very corny and overused expression, but I had the best of both worlds, because I was in this wonderful group. It was actually a very unique group. We were in private practice but we had subspecialists, some of the leaders in the country in most of the subspecialties in ophthalmology. We were our own bosses and did our own thing. As a group they valued the kind of intellectual pursuits I cherished. I'll add the words "academic pursuits," research interests that many of us had. But I also had the benefits, and there were certainly benefits, of being at the university. So I thought that I would never change, and that would be the practice from which they would ultimately carry me out in a box someday.

What happened was the milieu changed, and Madison...this was starting back in the 80s, probably, really became at the national forefront of being dominated by groups and managed care. It evolved over a period of time that single specialty groups basically could not survive in Madison. Everything was being carved up by several big players that dominated the patient pool. Patients weren't free to go where they wanted. So what happened was this group was bought up by a large multispecialty clinic, and we went from being autonomous and our own bosses to part of this big machine. And although nothing changed on a daily basis for me, I still went to work and I liked it and things were good, I felt like it just wasn't the same. At about that time, Dan Albert became chairman at the university, and he was very

inspirational to me. I thought he was going to do great things there, which he did, and I wanted to be part of that team. So I more or less had to make a choice of going fulltime one way or the other, and that's what drove my decision to leave the private group and go full time at the University.

So for you, Art, along the way you've certainly had some mentors. Who are your major mentors and role models, and probably most interesting, who are the perhaps forgotten smart ones that other people may not really know about?

ART: Well, there's no question in my mind, you know, the standard mentors in my life were Arthur Linksz, Harold Brown, and Gordon Walls. Arthur Linksz I first met at the Lancaster course, which was given in Florida, mainly for [WWII] veterans returning from the service, returning from the Pacific theater. I saw this course in Florida, and how could I resist? It was a basic course. And I met a star-studded cast: Lancaster, Burian, Linksz, you name it... Boeder...and it was really a star-studded cast. And I got to know Linksz very, very well. His book on vision is priceless—terribly indexed, you know, you have to hunt for what you want, but when you find it, it's liquid gold. Unfortunately, it's not a very popular book now because it starts, when answering any question, it starts with Aristotle, Hering, and Helmholtz, but it's fascinating. He and Duke-Elders' books, volume X number, are no longer very popular and they're out date. They're monumental tasks to write those umpteen volumes. But, still, pearls are the introduction of the chapters and sections. He was a wonderful writer, assisted by the charming Lady Duke-Elder, and others, of course. Those are monumental works, and the history of things...again it always starts back with Aristotle and the very beginning of things. I used to visit him when I was in practice once every month or two in New York because I loved to sit at his feet and listen to him...one dinner was worth the trip...it was priceless. Many of my works give credit to that and show his influence in my life.

Lancaster was a [mentor too]. At Lancaster's course he stopped me because I gave an answer to some optical question the right way...in a way they hadn't expected...I had based my answer on my optical experience from optometry school (through prism optics), and he wanted to know where I got that basic optic information. And he sent me off, also, to go to different

places in Europe, for instance, Keith Lyle in London. He also sent me to this young guy who had just begun to see infants and children, named Frank Costenbader. He had been doing that for just about six or seven months. He thought that I might be interested. So I did that. I went to Washington and Costenbader was very gracious, and I spent several months with him, six months. And I also spent time at the orthoptic school with the orthoptists. I always would tell people in the Costenbader Society, and especially my good friend, Marshall [Parks], that I really was the first one at Costenbader. I should be the President of the Costenbader Society! All in good spirit!
[Laughter]

Gordon Walls was a gem. Gordon Walls was a zoologist turned vision physiologist. He was at UC, University of California³, and wrote several books. One of them was *The Vertebrate Eye*⁴, which everybody should read...whether they plan to get a Ph.D., M.D., or whatever. That book is as much a gem today as it was then. He wrote a series of articles on Land (the well-known author and inventor). One is entitled “Land! Land!”⁵—priceless articles that are still in print. Walls would compose drafts by hand without ever correcting his writings. That was his way to do publications. I got to know him well because, as a bachelor living in San Francisco, I never could get a peaceful weekend to read, so I read at a place in Mill Valley, California that had a pool and I’d swim every morning. And he went there once and wanted to know if he could bring his daughter, Istar, on weekends. So I spent many a weekend with Gordon Walls learning things. And anybody in this field of strabismus who hasn’t read Gordon Walls’ 1951 article *Theory of Ocular Dominance* has failed to read one of the pearls of all strabismus, *A Theory of Ocular Dominance*⁶. It ends something like this, that “people that may not pay too much attention to this book at first because they won’t understand it...the beauty of it will come long after I’m gone.” It wasn’t exactly those words, of course, but that was the general idea.

Those are, by far, my mentors.

³ University of California, Berkeley School of Optometry

⁴ Walls, Gordon Lynn. *The Vertebrate Eye and Its Adaptive Radiation*. New York: Hafner Publishing Co., 1942.

⁵ Walls, Gordon Lynn. “Land! Land!” *Psychological Bulletin* 57.1 (1960): 29-48.

⁶ Walls, Gordon Lynn. “*A Theory of Ocular Dominance*.” *AMA Arch Ophthal.* 45.4 (1951):387-412.

Well, Burt, what are the important questions that remain in your field of expertise, interests that deserve attention?

BURT: If I refer to my field as strabismus, because I've really gravitated very much toward being a strabismusologist and less of a pediatric ophthalmologist in recent years, I'm not going to talk about retinopathy of prematurity and cataracts and glaucoma, but just strabismus. I think there are two main areas. One is the variability of strabismus surgery. I think that we all know that strabismus surgery is still more variable than we like, and it's primarily, in many people's hands, formula-driven. The formula is based essentially on the angle of deviation which people then tweak. If there is a high ACA you do more surgery, or if there's this or that you do a little less surgery. But I think that the factors that really cause the variability in strabismus surgery, the big factors, are ones that we don't have a good way to quantify now. They have to do with things like the neural input to the muscles, the tonicity, if I may use that term, the intrinsic properties of the muscles. There is so much information that is coming out now on the ultra structure of the muscle, the distribution of fiber type and so on. And I think that there's a lot that we're going to learn, hopefully, in the near future about how to do a better job of tailoring our surgery to the individual patient and have it less based just on angle of deviation.

The other area in which we need to and will make progress has to do with the brain's adaptation to strabismus and how to reverse it. I think that we do a much better job of getting the eyes straight than really improving the binocularity of patients once we get them straight. I mean, there is already a lot of data, you know, the younger it's done...the early...the shorter the duration of the strabismus, the better the outcome. But is there really a way to improve sensory function? I think is still a vastly underexplored area.

So I would say probably those two areas.

You've certainly given a lot of thought to that same question. What do you consider the areas that deserve attention, the important remaining questions in your field?

ART: I think probably the most important thing is to not create new tests, new theories, etc., but to pay close attention to the fundamental principles.

The major problem in strabismus, now, management is failure to believe what Donders told us: that accommodation and convergence sort of go together. A pair of glasses may cure people at four months of age, and when it's a refractive error of 2 or 3 diopters, that's important. Some people state, it's not important until 3 or 3½ diopters, and there's not consensus there. So I don't think you could get out of the mud in strabismus until people pay attention to Donders. Give glasses all the time when necessary, full corrections, etc., and do not give actual credence to the partially accommodative, which means that you have a strabismus that you could maybe cure with glasses or partially cure with glasses, etc.

The number of reoperations, to answer the question specifically, is still too high. Reoperations? My goodness, you don't give glasses or adequate glasses, and then you find it goes out and then you operate again. That's...I don't know what word to use in this recording! [Laughter] That's not good!

That happens all the time: not adequate glasses. Or "tried glasses" or "were attempted but were not successful," which may mean anything from holding up a couple of lenses in front of the squirming kid and nothing happened in a second and therefore you "tried" them...I'm being a little emotionally involved at the moment when I say that because something close to that happens...or "tried them" and they were not sufficient. And I think we're responsible for a lot of reoperations that we could prevent.

I don't think I better go further because I'll be on my pulpit! [Laughter]

[END PART I]

ART: Well, Burt, let me ask you this: What inspired you along the way – mentors and role models? I don't think you've answered that one. I tried. Can you answer that one?

BURT: You know, it was very interesting for me to hear you talk about mentors because I've known you many years, and many of these same names have come up in our conversations along the way. I found it very interesting to hear it sort of condensed in one package, "These are my mentors." And it's interesting that the Lancaster Course played a role for you, because it did for me, also.

I think that my first mentor, really, was my first department chairman. That was Matthew Davis, Dinny Davis. I consider him a role model of ethics and fairness, and also scientific rigor. You perhaps know, I've never taken a course in statistics, I don't consider myself a statistician per se, but just by osmosis being around Dinny, I learned a lot. He was the father of clinical trials in ophthalmology, the first diabetic retinopathy study. I think that he instilled in me a way of looking at scientific data and study design for which I'm very indebted to him.

The next one along the way would certainly be John Flynn. And John is the person with whom I did my fellowship. John instilled in me just an excitement about intellectual inquiry. I remember he so often said, "Every day of your professional life you should be asking and answering exciting and interesting questions." And he had a dynamism and enthusiasm that was absolutely infectious.

Dan Albert became our department chairman around the time of this shift in the milieu in Madison, and Dan was also very inspirational as far as someone who was ethical, fair, and also very broad-brushed. Dan is a real scholar. He reads, he likes books, he likes literature, and he modeled a lot for me.

And I'm not at all embarrassed or reticent to say, Art, you have also been an important mentor, even though I didn't have any formal training with you. We've had a relationship that I have valued greatly, and I think you have definitely been an inspiration and in many ways a role model for me. So that would be the package that I would come up with.

ART: I'm glad you mentioned Flynn. He is exactly as you describe—effervescent enthusiasm, honest as the day is long, more honest than the day is longer, absolute integrity, and instilled that desire to learn and share, as an individual in public and social life, as well as in academia — a great person.

I did not mention one of my mentors, also, Ed Maumenee, who came out to take over the Department of Ophthalmology at Stanford when I was a resident. And, as a matter of fact, I was his first resident when I came back. I learned a lot from Ed. I'd been doing cataracts the old Vienna taught way

with a full von Graefe incision with the right hand and then over the other eye, full von Graefe incision with your left hand...with your left hand! With a metronome to music almost, and you had to have a rhythm to the operation. Don't ask me why, but Hans Barkan, in his previous profession, a wonderful guy, he was a musician, and that was important to him. But Ed was a door-opener like I've never seen. Opened the door to many relationships with then leading people in ophthalmology, encouraging me to do my thing, and write papers, and do research. And it was extremely important to me at that time.

Hans Barkan was unusual, as I mentioned...maybe I can squeeze in a little story here. During one of our meetings with "Mr. Zilch"—that fictitious patient in the middle of the day that was actually our 15-minute office chat—one day I walked into the room and there was coffee and tea and so forth, he was over at the window blowing smoke rings out the window as fast as you can count—boom, boom, boom—perfect. So I knew he was irritated, agitated, and everything else, and I wasn't about to mention anything or begin a conversation until he did. And maybe he wasn't going to say anything for the whole damn 15 minutes! He finally turned to me very slowly, and he said, "You know, Art, I don't know why he did that to me..." and he told me the story about being sort of stabbed in the back by a very good friend. It was a friend of many, many years. And as he was talking he would say something and a thought would come back to him and he would blow smoke rings again. It was his relief. That was his... his excess gas came out that way. And the story was just this: He finally turned to me and said, "You know, Art, I don't know why he did that to me, but he was a good friend. I've never really done that much for him." And if you think about that one for awhile...you learn a lot about people and about him.

BURT: You know, if I may just digress from the back-and-forth, as long as we're telling stories, and you mentioned, John Flynn, I probably should add this to my comments on John. Because there's an interesting story that not a lot of people know, and John is very much responsible for me going into pediatric ophthalmology. When I was a resident, I was one of those individuals that was enthusiastic about everything. When I was on the retina service I was writing away for retina fellowships, and when I was on the glaucoma service I was contacting glaucoma fellowships. But after my first year of residency, I also took the Lancaster course, it was given in Maine,

Waterville Maine. The year I took the Lancaster course, three people from Bascom Palmer came up to teach the neuro ophthalmology week. There was a guy named Ed Norton, another was Joel Glaser, and John Flynn. And when Flynn would lecture, I just felt electricity in the room. I said I...I've got to study with this guy. So I went up to him and asked him if he took fellows, and he said he did. And at that time I fully thought that I was embarking on a career in neuro ophthalmology because I so badly wanted to spend a year with John and I thought he was a neuro ophthalmologist. He said, "Write me." When I wrote him and he described the fellowship, I said, "Wow! This is even better. It's not neuro ophthalmology, it's a pediatric ophthalmology fellowship." So I applied. I've never let him live this down, but I was his second choice for his one fellowship slot, and I did not get accepted. Then later he got funding for an ROP grant and was able to take a second fellow, and that's how I got my foot in the door. As a fellow, I spent 50% of my time doing research on ROP. That was my introduction to pediatric ophthalmology.

So let me turn back to you, Art. Smith-Kettlewell was this amazing institution that you are so responsible for. What do you consider your most important contributions, and how did they come about, including Smith-Kettlewell?

ART: It's kind of a long story. I had to make a chart. Several people have recently hit my age at 92 and 93 next month, asked me that question, and I don't know why they're increasing the frequency of asking me the question! [Laughter]

They ask, "what do I think my legacy is" and then they mess with my legacy and they are never correct. My legacy is: try to bring better science into the management of strabismus, the management of diagnosis, treatment and research, etc. Everyone knows that strabismus is still a good deal of lore and custom, so I became interested in accomplishing that. Little did I know that it would form relationships that were so important to me. They only took one new fellow a year, or two, so we didn't have the nine fellows that other people did. We started out by the declaration that we would have a research laboratory. I started a research laboratory in psychophysics and electromyography long before Smith-Kettlewell Institute was conceived, while facilities still belonged to Stanford University. Stanford medical

facilities moved to the Stanford University campus in 1959, and we morphed into a private non-profit organization, now known as California Pacific Medical Center.

And we did a lot of psychophysics and electrophysiology. The electrophysiology was learned as a fellow at the Karolinska Institutet in Stockholm, which was the then the world center of such activities. The war had ended, and, upon discharge, I embarked on a self-financed worldwide tour and "fellowship" for a couple of years. Upon my return to San Francisco, we set up an EMG lab at the then private medical center and did quite a bit of psychophysics and strabismus research with some wonderful people – Gunilla Haegerstrom-Portnoy, Tony Adams, Mert Flom, and other members of the Berkeley Optometry School. Some of the professors at Stanford also collaborated on the site, actively. Frank Weymouth, Ph.D., was a professor in the medical school, a man who was deep in vision research and visual sciences. He was the first one to really investigate the "why it was" that the retinal structure is such that it did not entirely explain the wonderful acuity when there weren't that many cones in the fovea or macula to do that. Weymouth predicted the physiologic fixation nystagmus that later Frank Adler, M.D. (strabismus specialist and book author) finally demonstrated very simply with a corneal reflection method.

It's been a long, long road. I wanted to remain private and independent, and focused on strabismus. Remaining private was difficult. Separating from the department was difficult. Being independent was easy. Everybody that knows me knows that I love my independence and I think I inculcated that to others also. I focused on strabismus, binocular vision and rehab. Rehab because my father and mother both had macular disease, as do I in one eye now. I got interested in rehab very early and we had wonderful people trained in engineering and specialized in vision rehabilitation of low vision and blindness, such as John Brabyn, Ph.D., and Deborah Gilden, Ph.D. These people are still with us at this time at Smith-Kettlewell Institute.

So those things became personal. And it was very easy to go off path and do things that weren't especially focused on those areas of binocular vision, the strabismus. Strabismus, after all, is rehab if you think about it. It's treating residual vision, and strabismus is residual vision in a great sense.

And I'm going off track. We made a couple of... more than a couple of errors. We had a Ph.D. program because that was what the laboratory people wanted, an equal basis of laboratory, clinical, and rehab people. And laboratory people in their DNA have a different way of looking at things. Ophthalmologists have a different way of looking at things in medicine, and we have people who have a different way of looking at things, and they're hard to change. So going off-path and getting a Ph.D. program because we wanted to satisfy some of the needs of laboratory people especially. This was a mistake, which was rectified by the very people who wanted to establish it first. The Institute, within a few years, became world renowned because of the collaboration between the clinical researchers and the laboratory people. Publications began that wouldn't have been published before and people who are on the ophthalmology-strabismus aspect, published and did papers they never would have done before without the laboratory researcher collaborations. So along the way were helpful people such as Henry Metz, Alan Scott, Robert Johnson, Carter Collins, Bill Good, Susan Day, Don Fletcher, and a host of other valuable researchers, who joined Smith-Kettlewell Eye Research Institute. There was a precursor laboratory following the teachings of the Karolinska Institutet, over a ten-year period, that included research with me, members of the Berkeley Optometry School and members of the Stanford faculty.

Let me ask you, what do you see as the most important positive changes in your professional life over the years, in your professional life?

BURT: Well, I think that in my professional life, referring to what's going on in the profession, not for me personally, I feel we're learning more all the time. I think that some of the newer advances...some of the newer explorations going on the cellular level of extracular muscles, I would suggest are very important. I believe that the work on brain plasticity as it may relate to strabismus is very important. I imagine that the advances in genetics will probably help shed light on a lot of the unanswered questions that we're dealing with now.

I think that for my own...the personal aspect of my professional life, I recognize that when I made the change from being part-time private practice to academic, I did have the opportunity to be more involved with teaching. I was always involved in teaching, both residents and fellows, but I know that

I became more immersed in that, and I feel that that's been a very positive change.

That's how I would answer you.

I have a question for you, Art. And there's sort of a little story behind this. You have a really, particularly, of your stature, a remarkable gift for being supportive of and giving credit to others. And if I may, before I ask it as a question, give as a little backdrop anecdote. You may not even remember this story. It was relatively early in my career when I was pretty unknown. You had given a presentation, and you mentioned what I believe you referred to at that time as the Unilateral Ciancia Syndrome— patients with one blind eye who have abducting nystagmus of the other eye. I had a prior obscure publication on that finding. Later you and I were having lunch or dinner at the meeting, and I mentioned that I had written this earlier paper, which you weren't familiar with at the time. I thought nothing more about our discussion until the transactions of the meeting came out. Lo and behold I saw you put an asterisk in your text with a footnote saying "Burt Kushner described this previously." They had already typeset your paper, so you couldn't change it. But they did let you add this footnote and you made the effort to do so. I don't know anybody else who would have gone out of their way to do that. I was very touched by your having done so, not that I felt I needed recognition for that observation. But the fact that you really went out of your way to mention what was really a relatively obscure credit, I thought really spoke volumes. And I'm curious where that came from in you? What do you attribute that to? It's very admirable.

ART: Oh, that's a very nice story. I wasn't aware of that one, Burt. I guess that was one of the mistakes I made, too. [Laughter]

I'm not sure. If you are asking about the beginning of such things...as I think about it for a moment, I guess it's Philip Knapp. Philip graduated back east as you know, Midwest, Iowa, etc. Was interested in strabismus, as was I, and we would...each of us had our own fellowships traveling around – I mostly in Europe and Latin America, and he mostly in the East, in the United States. We met once or twice and compared notes about who was good and who was bad, and don't go there and here's why, and you should spend a week or two or three, or a month or two or three. And he was a

stickler for that, making sure that you knew who originated something. He had a wonderful memory, a steel memory. He could go way back and cite the date and the time and the authors, etc. And at meetings, no matter how casual the meetings, no matter where...if we were even just a group of people...if somebody would even not mention a trivial contribution, but a documented contribution of somebody, he would call the person on it publicly. He was a southerner, impeccably polite, always. But the one thing that unlocked the little door that would bring Phil Knapp's anger out was if you didn't give credit to somebody...and I think I'm really indebted to him for learning that from him. He never, ever failed to give credit. No matter who it was, he would stand up and with a little bit of emotion and the question wasn't, well, "why didn't you?" No, not the question, but just "you didn't!" [Laughter] And it was clear and it was repeated, etc.

And I find that today...I find that people have great feelings when their name is not mentioned about something. I have great feelings about it, too. Everybody is human. They don't want to admit it, but that's true. And it's so easily corrected to give credit, and a little credit goes a long, long ways in reemphasizing how important it is for that person. The feeling is good and it puts them along the way a bit. So I do go out of my way and try to...thank you.

BURT: One of the things that you've taught me is that – and I absolutely have experienced what you described with Phil Knapp, is that giving credit doesn't diminish the giver at all. It enhances him, if anything. But there's no diminishment in giving. But I did not know that that Phil was a model for that for you. That's very interesting, and I can certainly see it.

ART: Phil was one of my closest friends and one of my staunchest critics.

BURT: Yes, I know both are true. [Laughter]

You once told me a story... I'm in a story-telling and listening mode now, about your turning down a chairmanship, after you asked if you would be able to hire or fire your own secretary. Does that ring a bell? Do you remember...tell it again if I've described it correctly and comment on the significance thereof.

ART: Oh, dear, that goes back—what?—30 years? 40 years, I guess. Yeah, here goes. Okay, that’s a very personal one. At Smith-Kettlewell, we had built our building...no, we were about to build our building, had money to do that, I had raised a fair amount of money, which would bring together laboratory people, clinical people, and rehab people. When Stanford had moved down to Stanford...it was first at Palo Alto and then San Francisco the last three years. There were those combining something into a thing called neuroscience, which was an absolutely brand new word at that time. There was a fellow at Stanford named Jake Hanbery. We knew each other because we were both members of Boy Scout Troop 12 in Long Beach, California! (Later Hanbery was in charge of neurosurgery at Stanford.) We were both in Boy Scouts! [Laughter] What goes around comes around. We were going to combine our interests in research and surgery, ophthalmology and neurology, and were pretty serious about that. Some of the people had gone down to the Stanford area (south of San Francisco) to look at the foggy places so that they could be similar to the foggy parts of Mount Tamalpais. And Carter Collins, everybody knows, was one of our chief laboratory people, and became a wonderful physiologist in vision, in engineering and everything else. Everybody knows him. And so I called somebody I knew down at Stanford, Chairman of the Radiology Department that used to be up in San Francisco, and I asked him, “why I should or should not go down?” We had lunch. And he said, “Art,” during lunch, he said, “I know you’ll be very independent. Why don’t you ask the Dean when you go talk about this...” and I was about ready to sign up...”ask if you could hire and fire your own secretary.” And I said, “Oh, come on! I’m serious about this. You know, I mean, all of us are going down to spend our time...take my money and my bag down there and build this new thing, we’re all going to move down. I don’t want to fool around with this or play with it.” He stopped, waited, looked me in the eye and said, “Why don’t ask the Dean whether you could hire and fire your own secretary?” Well, that must be very important. So I asked, “Why the hell should I or should I not?” “Well,” he said, “that will tell you how much independence you’re going to have.” Well, long story short, very short: I went to the Dean’s office and we had tea and crumpets, and danced around on pleasantries for awhile, and finally I got around to asking it in a very oblique way and then in a direct way, “Could I hire and fire my own secretary?” The answer was, “Not really.” It was pretty obtuse at first, but really the question got to be sharp and the

answer got to be equally crisply defined, “No I couldn’t.” And so we did not go down to Palo Alto! [Laughter]

BURT: That’s great.

ART: So I told that story—I won’t mention names—to some of my fellows, who when they were finished said, well, they were offered a job here and there. I guess the first one was Henry Metz. I remember sitting in my living room. He was going to take the job at a big university on the East Coast. He wanted to know what questions should he ask? “Henry, ask whether you can hire or fire!” And people have come back and said, “That was the best damn question I’ve ever asked!” [Laughter] Because that’s when they couldn’t either, change it or wouldn’t do it. Henry took the job, but he could hire and fire his own secretary.

BURT: Great.

ART: There, now you have it.

BURT: Okay.

ART: I won’t ask you some embarrassing questions.

I’m not sure we touched on this subject, did we? What are the several things you would still most like to accomplish?

BURT: Well, I think that with respect to in the field of strabismus, it would be things I alluded to earlier, and that’s the understanding the variability in the response to strabismus surgery. I think that is probably the biggest unanswered question in strabismus right now. I think I would like to have a hand in that.

I think that in the non-scientific realm, I’m still hoping to expand our fellowship program, and be able to take an international fellow, which due to logistic reasons we’re not able to... we can take international fellows as observers only, and I’d like to be able to expand their fellowship program to really do more international outreach.

I feel on kind of a personal level, and maybe this overlaps with the idea of what I wish I had done differently. I don't think that I have participated as much as I would like in some of the outreach opportunities for going to developing countries or to advanced countries to teach. Many other people that have done this. I don't know if they all have come under the mantle of mission work, but actually providing care in other countries. I've been in many countries as a lecturer, but that's a very different venue, and I think I would like to expand my international outreach.

Let me ask you one other kind of anecdote, if I may, because it's a story that I heard and I think is worth repeating here also. It's a story of you during World War II, and how you ended up being sent to the Pacific Theater. I think that the story had something to do with your refusing to reuse needles for immunization for recruits, but I never heard this directly from you, so maybe this is the time.

ART: Oh, my god. You're really dragging it out here! That's a pretty personal one. Well, I volunteered for Army medical service and did not take the fellowships offered at that time, and soon found myself in Alabama in an artillery training camp for pre-overseas soldier training. And I had to learn to go under the barbed wire and the usual things, because people shoot the people with the red crosses sooner rather than later, and we had to do all those kind of gun-handling things. Anyway, part of the thing there was inoculations and immunizations for people going overseas. And I was a bachelor and I hated the clinic line up and the buildings, so I traded places with those who were married and wanted to stay locally, and I went out in the field all the time in the jeep. One of the first things I ran into were corpsmen who were immunizing big lines of soldiers early in the morning. And they were changing the needle about every third or fourth time. The syphilis rate in that area was kind of high, and I said, "Well, you've got to change the needles." And he said, "Well, Doc, we don't got that many needles." And I said, "Well, I'm sorry, you just have to. You can't use the same needle for six or eight people." And that got...I was the commanding officer being the lieutenant of that particular field, and I said, "Well, I'm sorry, but we're not going to do it. So we'll devise another method." Well, within a couple hours, the colonels and people came around off the field and said, "What the hell is going on around here? All these guys are late, we can't do our field trials and so forth. Who's responsible?" And everybody

pointed over at me, and I told them the story of what was happening. They said, “Well, do what the guy did before you were here.” And I said, “I can’t do that, sir. I’m sorry.” I told him the medical reasons and so forth. He said, “I don’t give a damn. Do it!” And I said, “Well, I’m sorry to refuse your orders, sir.” Anyway, he called the commanding officer of the base in and in about 30, 40 minutes he was there in his jeep. To make a long story short, he put his arm around me and said, “Now, Lieutenant, I know how it was in medical school after your residency and so forth, but here in the field we do it differently. And right now, you’re stopping all of the artillery exercises, etc. because of your bias about it.” And very kindly he said he was a CCC MD – remember those during that era?

BURT: Yes.

ART: He said, “Please just do it.” And I said, “I’m sorry, sir. I really can’t do that.” And he said, “Well, you know what an order is, don’t you, Lieutenant?” I said, “Yes, sir.” He says, “I am commanding and ordering you to do what the previous person did.” I looked him in the eye, “I’m sorry, I cannot do that.” And he flipped...he gave me the keys to his jeep and said, “Go back to the barracks. Keep your nose out of everything except the mess hall, and back to your barracks and don’t do a thing,” he said, “and the court marshal will begin as soon as I can arrange it.” And I really thought I was going to be court marshaled. Well, about five, six, seven days later, there was no court marshal, and I was getting tired of going to the mess hall and going back. I got my orders for overseas! [Laughter] You don’t solve problems, you just get rid of them! [Laughter]

Why did you ask that one?

BURT: Well, aside from it being an enjoyable story, I think that it really speaks to your integrity. I believe that obviously not everybody would have done what you did, and I thought that story should be immortalized.

ART: I wish I knew one personally I could ask about you that gave you integrity! [Laughter]

Let me ask you...

BURT: Yes, go on.

ART: I mention this because you're now looking at things outside of the direct practice of ophthalmology, in the sense of doing things internationally and so forth, which I think is interesting and commendable. Are you happy with the direction of medicine ophthalmology is taking currently?

BURT: Am I happy with the direction ophthalmology is taking? I think that's a layered question, because I lament a lot of things that are happening in medicine. I talked earlier about the institutionalization of medicine. I think that I'm actually rather distressed about the way education in medicine has evolved with these short sound bite meetings that only allow short sound bite presentations. Someone will have six minutes to give a paper, and someone else only four minutes to discuss it. I think that there is more emphasis on entertainment than actually transfer of information. I feel the influence of industry, the drug industry, in particular, has greatly tainted credibility in what we do in science. So those are things that I think are negative. I think electronic medical records are something I could speak about, and against for the next 80 minutes if we had the time. But at the same time, I think that there are fabulous advances that are being made. When I look at things that are treatable now that were so devastating and untreatable when I went in practice. I think medicine is making great advances.

Maybe I'd just close with... because we are near the end of this exchange of ideas, that I have one aphorism framed on my wall in my office, and that reads "The teacher whose students do not disagree with him is not a teacher, and the teacher who fears his students' disagreement is also not a teacher." And I think that that is something that I kind of carry with me into the clinic every day when I go or when I interact with residents and fellows, and I think when I see the bright next generation and the questions they ask, and the ideas that they generate, and the positive projects and studies they come up with, that gives me a lot of hope.

ART: A very cogent answer. Interesting that we both finished our little conversation here with the things that we are going to do out in the wild blue yonder in the last years of our activity. Ask me when I'm going to quit and that's a silly question! It's not going to happen.

I guess maybe to piggyback a little bit on what you said about your international ophthalmology interest that interests you now and intrigue you. It's sort of the same...I have the same kind of a feeling. Everything is international now. You know, there are no walls to collaboration. You can collaborate with somebody across the world just as easy as you can on the floor beneath or above you, or a collaboration may not occur because of political reasons. Oh, about 20 years ago at Smith-Kettlewell, the CEO sorted us in what we call satellites. My focus is always research, and research comes high because there aren't that many people doing really focused research in the field, and I can stimulate others to do it. Simplicity in communicating that to clinical relevance is terribly important and one of the things I may be oversimplified in time, but when I ask fellows when they're done, "What did you learn," not things and tools and techniques, but "What did you learn?" And the answer was, repeatedly, "Art, you taught me how to think about strabismus," which I considered one of the highest compliments. You have to think about strabismus because there are 12 ocular muscles and it's very difficult to think about what to do with them, and a lot of physiology. It's better to be a mechanic and just move the furniture around, take the cataracts out, put new ones in, or glaucoma, you turn the spigot up a bit or down a bit and flush it out, like a plumber.

At Smith-Kettlewell Institute we formed research satellites in several different countries, usually with strabismus surgeons who did a fellowship at the Institute and then would return to their homelands. It was difficult for them to start research programs from scratch in many foreign places. So, Smith-Kettlewell has supported with funds and equipment that gave great starting momentum to new returning fellows at foreign hospitals and research units. That's now going along nicely and I'm very pleased about it.

BURT: Thank you.