An Interview with Donald Kepron on the Occasion of His Real Retirement

Dr Kepron *(left)* with Drs Chaytor and Zarb.

The impact of implant therapy on our discipline clearly let the genie out of the bottle. This helped break down specialty-driven silos in assessing patients' overall oral health needs, rather than reinforce them. The result was a new treatment planning orthodoxy that is gradually becoming a powerful antidote to old discipline-contrived dogmas. Regrettably, the traditionally strong educational emphasis on the topic of occlusion and its role in crafting optimal treatment plans for patients had already started to weaken when osseointegration entered the modern lecture circuit's priority rankings. This was unfortunate since an appreciation for occlusion's role in treatment planning remains such an obvious focus for integrating diverse and often conflicting treatment agendas. While scope for rehabilitating oral function resulted from predictable implant therapy, accompanying developments in surgical and prosthodontic skills were not matched by a comparable increase in our understanding of the resultant functional aspects. The neurophysiologic response to osseointegrated implants remains elusive and certainly underestimated. Which is why the current explosion of research interest in neuroplasticity is bound to make significant inroads into dentistry's better understanding of so-called osseoperception.

Throughout the last half century, numerous clinical scholars in different leading dental schools around the world devoted their academic lives to the study of occlusion. They laid down the road map for our current appreciation of the complexity of masticatory function and parafunction, and are now arguably best known to those of us whose own learning and teaching growth benefitted from their shared wisdom and unique capacity for guiding and promoting. Donald Kepron is one such exemplar of intellectual courage and integrity; and his inadequately recognized contribution to Canadian prosthodontics demands special acknowledgment in 2013—the year he retired from practice following his earlier retirement from his academic role at the Faculty of Dentistry, McGill University in Montreal, Quebec, Canada.

I therefore invited Douglas Chaytor, long retired from his Dalhousie University prosthodontic chairmanship in Nova Scotia, and a past secretary of the International College of Prosthodontists, to interview Don Kepron. All three of us have been friends for many decades and shared a recent reunion to celebrate our role in the founding of the Association of Prosthodontists of Canada, which took place in Ottawa in 1971. *—George A. Zarb, Editor-in-Chief*

What motivated you to specialize in prosthodontics?

In the fourth year of dental school, I was awarded the Gold Medal for overall scholastic and clinical excellence. I was offered graduate training as a Kellogg Fellow at the University of Michigan in prosthodontics or orthodontics. Both of these fields were interesting, but I leaned toward prosthodontics because the complexity of the movement of the mandible had become a very interesting concern. This was the year 1954 when the University of Michigan had an excellent reputation for graduate education in prosthodontics. Moreover, at the time, the chairman of the prosthodontic department at McGill University was a University of Michigan graduate, so it was a natural choice for me to accept a scholarship for studying prosthodontics at the University of Michigan.

The most popular buzzword in the dental profession at that time was occlusion, with its accompanying challenges of the significance of terms such as centric occlusion, centric relation, occlusal morphology, mechanics, efficiency, and comfort. I thought that I could produce a "machine" that would accurately duplicate mandibular movement and could be used to develop an optimal occlusal morphology that would be mechanically efficient, comfortable, and good looking.

This idea had been pursued by many dental practitioners over the previous 70 or more years, but none of the available mechanical devices had the sophistication that I thought could be put into such an articulating machine. Dr Charles Stuart of California had produced his new articulator in 1954, and the University of Michigan had received one of the original instruments that was available for graduate student use. However, I never had the opportunity to use it. The instrument of choice in those days was the Hanau, a somewhat crude partially adjustable articulator.

Tell us about some of the prosthodontic leaders of your time.

As an undergraduate student, I had no knowledge of who the leading prosthodontists in the field were, especially at an international level. We were not encouraged to browse through dental journals and concentrated instead on assigned texts. It therefore blew my mind when I entered the library at the University of Michigan and saw the size of the facility and the thousands of books that filled the shelves. Dr Richard Kingery, chair of Complete Dentures, and Dr Oliver Applegate, chair of Partial Prosthodontics, made a point of introducing their graduate students to every guest prosthodontist who came to lecture at the University of Michigan. Graduate students were taken to various dental meetings and introduced to the best known prosthodontists in the United States. It was always interesting to read their publications and listen to their presentations for their thoughts on prosthodontic issues.

Tell us about your graduate research project.

I was interested in producing a model of the patient's head that could be "programmed" with the mandibular movements unique to that patient so that I could have an analog of the patient's mouth on my laboratory bench.

My peers appeared to accept the fact that as the mandible moved it did so around horizontal, frontal, and vertical axes (the three axes about which any object moving through space moved). The axis that seemed to command the most interest was the horizontal or hinge axis. I wanted to record the movements of the mandible, specifically around the horizontal axis. I wanted to prove or disprove the existence of a horizontal axis around which the mandible was said to rotate in the opening and closing movements of the mouth. No one in the prosthetic department knew what I was trying to do but I had a bit of luck. The chairman of the Department of Oral Surgery, Dr D. Dempster, was involved in a research project for the United States Navy. He was studying the range of movement of a pilot's arms when a pilot was strapped into the seat of an airplane. He introduced me to the concept of "Phoronomy of movement," which essentially stated that by placing two points on an object and then tracking these two points as the object travels through space, from a starting point A to an end point B, it is possible to geometrically locate the axes around which the object rotated as it moved through the three planes of space in going from point A to point B. My thesis was titled "Phoronomy of Mandibular Movement." I set up a movie camera and two mirrors to capture the frontal, lateral, and coronal view of the patient's head and photographed an antenna fixed to the mandible as the patient performed rotational and excursive movements. I filmed the change in "space" of the moving mandibular antennae relative to a similar static antenna fixed to the maxillae. This gave me a record of the mandibular movement relative to the maxillae captured on film. Recording speed varied from 8 frames per second to 64 frames per second. I had a view of the mandible in three dimensions as the mandible moved. Dr Dempster had a unique projection-tracing device that allowed me to study each film frame and follow the movement of a point on the mandibular antenna as it traveled through space. I plotted the movement and located the axis for each increment of movement, eg, in the opening of the mouth from the mandible in occlusal position to

maximum opening, and located the three axes for each increment of movement. The theorem was, if there is an opening and closing axis of the mandible then there should be a series of incremental movements whose axes should coincide with each other, and if in the opening and closing movement such a series could be located for the mandible, and if this series was found to be at the beginning of mandibular movement, this would be the "hinge axis" that was being referred to in the dental literature and dental teachings.

Would you like to tell us about some philosophy, principles, ideas, or approaches that particularly guided your teaching and practice?

I can't remember when, or why, I started "teaching." Looking back, it seems that all my life, whenever I learned something new it was second nature to pass on this new information to my friends and classmates and I guess to anyone who was interested. It seemed important to share knowledge. I never knew what gain from "insider trading" was. I liked passing on information that I felt would help the recipient. I still do that with my patients. I also realized, at some point, that there were many ways to solve a problem and that informed patients should participate in decision-making options.

Two experiences come to mind from my student years that I feel were the principal motivating factors in my teaching and clinical career. The first was as a third-year student returning to my home town for the summer and noting that my older sister who was managing a ladies boutique had a restoration in her central incisor: a Class III gold foil. It shone as only a gold foil could shine and looked dark and unesthetic. I am sure her dentist must have been very proud of his handiwork, but it looked terrible in my sister's mouth. The dentist did not advise her that other treatment possibilities existed and this experience stayed with me. I made sure that I explained to my patients what treatments were available and possible, and saw that patients were given the opportunity to choose a treatment that they were comfortable with. I taught students to take this approach also.

Another family experience taught me that I, gold medalist and other prizes winner in my graduating year, really had not learned very much. I made my mother a set of dentures immediately after graduation—my first "real world" patient. I used a Hanau articulator, got a "good centric," and used French's Posterior teeth—an excellent job. After all, I was the best student in prosthodontics. My mother wore the dentures with pride and I took off to Michigan to begin my 2-year graduate course in prosthodontics. Dr Kingery, chairman of removable complete prosthodontics, was giving a 2-week course in complete dentures and all new students were obliged to take the course. Within those 2 weeks I learned, to my chagrin, that what I had so proudly done for, or to, my mother was all wrong. Two years later, after graduating from Michigan, I returned to Winnipeg and, as quickly as possible, made my mother a new set of removable dentures based on my new knowledge of the anatomy and function of the stomatognathic system. I delivered the prostheses and my mother said: "These feel very comfortable and I can eat without pain. The dentures you made for me before going away hurt a bit." I said, "Why didn't you say anything for the last 2 years?" She answered: "I was very proud of you and since you were tops in your class I thought that it was supposed to be that way." From this I learned that you have to continue to study and be aware of changes in the specialty. You should be able to offer the most recent and best available treatment.

During your career, we have seen the advent of evidence-based dentistry. Have any of your favorite practices been shaken by this approach?

I have never been able to fully understand what the phrase "evidence based" meant. I always assumed that if you did something and it produced the results you required then this was evidence that the treatment approach you chose produced a successful result. That was not to deny that there were other approaches that would also work just as effectively. That was the whole purpose of the course I taught for so many years. The course was called "Treatment Planning Seminar."

In the third and fourth years of their dental schooling, the students were issued a patient that required extensive dental treatment. I chose patients that exhibited the need for treatment in several dental disciplines. The students collected diagnostic information such as casts of maxillary and mandibular ridges, maxillomandibular relationship recordings—static and dynamic (the students were required to do a gnathologic tracing of the patient's mandibular movement) radiographs, and medical and dental histories. These "data" were analyzed, and from the diagnostic information, several possibilities for treatment were to be developed. The students were required to present the patient's data and resulting decisions in a formal seminar before the entire class. The presentation had to include a minimum of four treatment possibilities. I hoped that the students would carry this concept into their practices after graduation.

In prosthodontics, one of my prime concerns was to show the student that there were many ways to treat a patient and produce a "successful" result. I guess that

what I wanted to show is that there are many ways to solve a problem. I wanted the student to be aware of this and not be drawn into one particular treatment philosophy and ignore all other possible procedures. There are many ways to treat a problem and produce successful results. If a chosen treatment produced a "cure," that was all that I wanted from the student. This in no way meant that this was "evidence" that this particular treatment was the one to use. Of course this was evidence that the student's choice of treatment was a good one. But in no way did it mean that other treatment procedures were not good.

When McGill University transformed itself from an internationally recognized superior clinical teaching facility to one heavily slanted toward research and into an "evidence-based" school, the "Treatment Planning Seminar" was removed from the curriculum and replaced with something termed Evidence-Based Dentistry. I have no idea what the course content is, but I do know that young graduates fill every theatre where a clinician presents a "how to" lecture on clinical procedures, materials, and methods.

What are the principles you feel should be followed in diagnosis?

All possible diagnostic information should be collected before any treatment is started. This should include not only the obvious medical and dental histories and radiographs, of course, but also casts of the dental arches and jaw relationships (static and dynamic).

What are the principles you feel should be followed in treatment planning?

I think it is important for the student to recognize that there are many ways to treat the problem the patient presents with. Just the ability to discuss with the patient what the diagnostic material that has been collected means and how it affects what is possible in treating the patient's problem is a tremendous step forward. A well-informed patient knows what procedures will be used, the time it will take to complete the treatment, and the cost that will be incurred. Every informed patient I have had in my practice has been a pleasure to treat. One of my professors used to say "inform before you perform" and "if you ain't got it on the shelf don't sell it."

How do you feel about the availability of successful dental implants?

I often wonder if I am the only prosthodontist that does not see any difference between fixed prosthodontics and implant prosthodontics. To me, the piece of metal placed into the jawbone is the same as a normal natural root. Yes, there is no periodontal membrane, but the fact remains that whatever is put onto the implant functions exactly as the natural tooth it replaces and the basic dictates of occlusion must be strictly adhered to if you want to insure maximum success. A piece of metal solidly anchored in bone in no way means that the basic principles of function and mechanics can be ignored.

Would you like to comment on other advances in dentistry?

I have only one comment. I would prefer to be starting rather than finishing a career in dentistry. Computerization of prosthodontic procedures, digitization, and wireless transmission will change the way the average dental practice operates. Some of the machining procedures common in industry coupled with computer-aided design/computer-assisted manufacture (CAD/CAM) are already being applied to dental procedures. Future generations of dentists, already expert with digital gaming, will be great with remote controls and dental procedures.

What are the frustrations you experience in dentistry today?

The greatest frustration is the lack of clinical skill that the students graduate with. The trend to emphasize the importance of research that often occurs at the expense of clinical exposure has taken its toll on clinical expertise. Dentists always seem to be hungry for clinical information. Clinical continuing education presentations command full attendance with attending clinicians accepting anything that is presented. In my practice, I spend a large portion of my time redoing prosthodontic treatments that have failed because the original practitioner did not follow the basic principles that students learned to present in their treatment planning seminars.

When people ask what prosthodontists do, I usually answer tongue-in-cheek and state that I specialize in Oral Resurrection Dentistry.

What have been some of the greatest satisfactions in your professional career?

Meeting and working with equally committed clinical academic colleagues and the development of ensuing and cherished friendships. But above all, meeting former students who thank me for what they learned from the course in Treatment Planning.