Special Article

Whither orthodontics?

Sheldon Peck[a]

ABSTRACT

What is the destiny, the future, for orthodontics and its specialists? It is disappointing that industry is leading our thinking these days. Much of our professional life centers around the device- and machine-based techniques, claims, and marketing of manufacturers. When did our passive role as followers happen and why? We may begin to reclaim control of our specialty by revising some aspects of our training programs and journal formats. Meanwhile, we may go back several decades in the literature and find useful insights from clinical sages—applied scientists—who were clearheaded, truthful, and science-based observers, writing before the industrial manipulation and noise we now have to compete with. (*Angle Orthod.* 2018;88:672–674)

Whither orthodontics? In other words, what is the destiny of orthodontics and its specialists?

Recently, I received an e-mail announcing "the premier event in Orthodontics." It was promoting the annual meeting of an American Association of Orthodontists Constituent Society, one of eight regional divisions. The slick wording promised that "this premier networking event will include dynamic sessions . . . led by industry leaders on the latest trends in orthodontics." And, as a bonus, this meeting for orthodontic specialists would be held in one of the largest casino hotels in the country.

It makes a retired orthodontist with a long memory wonder, when did we go astray as a learned, university- and hospital-affiliated, clinical scientific group, and why? Also, what have we missed along the way?

I am frankly disappointed that industry is leading our thinking these days. We read serious blogs addressing the critical issues in orthodontics, and they're pretty much all about TADs, miniplates, accelerated orthodontics systems, self-ligation, removable aligner therapy, cone beam computed tomography, and other device- and machine-based techniques and claims. Do the clinician's curiosity, experience, diagnostic savvy, and powers of observation matter anymore? Orthodontists are a highly selected group of bright people. What are we using our brightness for today, professionally?

I went to my old files, largely from the 1970s, with hopes of finding some answers. During those years, I eagerly collected thoughts and ideas of others that I felt had timeless merit. On torn-out pages from journals and meeting programs, I often penciled in comments or added hunches of my own. In carefully looking through this 40-year-old archive, I asked myself, "How were we as successful orthodontists thinking then compared with now?" Has our concept of scientific and clinical "merit" changed dramatically over this 40-year period? Why is the orthodontic industry now doing a lot of our thinking? Did we do it to ourselves or have we been subtly manipulated into a changed perception?

Specialty journals in orthodontics used to be a place where the best and brightest clinicians shared tested procedures, the results of series of cases, and essays with wise insights, among favorite topics. Authorship was rarely more than one or two orthodontists. Then, something changed about three decades ago: the best medical specialty journals, including those in orthodontics, fully embraced the mission of research journals. All submissions for publication were required to be research studies. Articles that were not reports of scientific studies or individual case reports were not welcome anymore. No longer could experienced specialists write essays about ideas and notions developed from years of careful observation, experimentation, and pragmatism.

I think it is still uncertain whether we are smarter and more advanced as specialists because of this restriction in journal content. However, at least one special interest group has benefited from these new rules: the orthodontics residency programs. Each resident, usually by requirement, must perform an acceptable

[a] Associate Editor, *The Angle Orthodontist*, Boston, Mass; and Adjunct Professor of Orthodontics, The University of North Carolina at Chapel Hill, Chapel Hill, NC.

Corresponding author: Sheldon Peck, Associate Editor, *The Angle Orthodontist,* 180 Beacon Street, Boston, MA 02116 (e-mail: peckslam@gmail.com)

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research project in order to graduate. The programs encourage and often demand that the study be accepted for publication in a peer-reviewed journal as a measure of quality. So, now there is a better chance that more of these required research papers by inexperienced clinicians may be published. Furthermore, many residency programs are happy to take needed funding from industry sources who strongly encourage product-related research. Perhaps this is why there are growing grumblings about the nature of much of what is published today in orthodontics: research as a program requirement instead of research as a honed skill, device-focused studies that recommend further investigations, systematic reviews that show weak or equivocal results, and randomized controlled trial studies often concluding with little more than a questionable splatter of data.

A solution may be that university and hospital programs for specialty training in orthodontics should make publication of resident research projects optional rather than mandatory. This has been the policy of most clinical residency programs in medicine. The purpose of these student exercises is to provide guided research experience, not to clutter the literature with some low-yielding reports that ultimately may serve only as resumé decorations. Of course, there are always exceptions.

In the early 1970s, I was beginning to examine factors that may cause dental crowding. I was frequently frustrated to find contradictory journal articles on this controversial subject. My university mentor, Herbert I. Margolis, of Harvard, Tufts, and Boston universities, took me aside with some sound advice. I will need to distinguish if my sources are from "clinicians" or from "applied scientists," insisted Margolis. He found that the best clinical research came from applied scientists, those orthodontists who knew enough to formulate the right questions and methods and who had the scientific brainpower to interpret reasonably their observations and results.

In 1966, Sidney Horowitz and Ernest Hixon, two eminent applied scientists in our field, put together one of the most useful and pragmatic books ever written about clinical orthodontics. *The Nature of Orthodontic Diagnosis*[1] identified many of the real clinical issues in orthodontics and roundly debunked a majority of them. The authors' timeless, sound reasoning has been largely forgotten, but it shouldn't be. For example, regarding the promise of data collection and digital manipulation as our gateway to new and better treatment, they concluded "The compilation of large quantities of data is no substitute for recognizing the clinician's professional responsibility in making diagnostic decisions." Their specific critique on the futility of computer-generated facial growth prediction is solidly supported with the finding that "individual variation in growth change is less than the variation between adults."

In flipping through my 1970s "merit" files, I spied other remarkably fine examples of applied science practiced and published by expert orthodontic observers. Galen Quinn[2–4] and Robert Rubin[5,6] each had unusual powers of integrating various diagnostic signs to reach unifying hypotheses. Individually, they recognized biologic conditions that could be causally related to the development of dentofacial deformities. Quinn outlined how nasopharyngeal airway obstruction could distort growth, leading to severe skeletodental discrepancies. Rubin independently concluded that atypical modes of respiration caused by airway interferences or allergens often lead to dentofacial deformities in growing children. Both authors convincingly insisted that these deformities were preventable. They each presented compelling arguments that should excite new researchers today. This is no humbug!

Robert Murray[7] was another contemplative applied scientist whose thinking made sense to me. He felt that for the best stability we orthodontists should sometimes leave a marginal malocclusion untreated. He wrote in 1956 that a minimal arch length discrepancy and slight facial protrusion may be best left alone. In the 1970s Gordon Dickson[8,9] provided support to Murray's contention by carefully studying the natural dental history of subjects with malocclusion. He found that there was no urgent need to treat people with mild to moderate occlusal deviations. According to his long-term observations, people with some excess in overbite, overjet, and incisor crowding showed almost no negative consequences in dental health many years later.

We would never hear these clearheaded points from an industry-controlled press. The concept of needless orthodontics or totally elective treatment is not a view that would be favored by today's sales-oriented supply, device, and services industry. Digitization and big-data computation continue to be romanced today by industry and tech wonks as a deus ex machina, a "god from a machine." Doctors love new devices, with their appealing claims of allowing shortcuts and less work. Patients usually do too. The history of computer applications in orthodontics is not a history of science but a history of commerce and marketing.

Our high-end journals in orthodontics have not kept up with those of their peer group in my opinion. An apt comparison may be made with *Plastic and Reconstructive Surgery*, the monthly journal of record for plastic surgeons who, like orthodontists, cover a clinical field with a wide range of procedures, from the cosmetic to the essential. The plastic surgeons' journal is compartmentalized into many sections to

reflect the specificity of subspecialty and the variety of publishable contributions deemed worthwhile. What used to be listed years ago in the table of contents under "Original Article" is now found distributed under many category headings: "Breast," "Cosmetic," "Experimental," "Reconstructive," which is further divided into "Hand," "Pediatric/Craniofacial," "Head and Neck," and other divisions. There are additional journal sections for "Discussion" (commentaries about articles in the issue, presumably written by reviewers), "Ideas and Innovation" (a category for wide-ranging essays by applied scientists and for the publication of novel advances), "Case Reports," "Editorial," "Special Topics," "Viewpoints," "Correspondence," and "Brief Communication." We need to develop varied section headings for our indexed orthodontic journals, similar to those the plastic surgeons have wisely incorporated, to recognize the multiplicity of needs and interests of an ever-complex specialty. We must invite a wider topical spectrum for our quality publications; research studies alone are not enough to keep us on top and in control.

As in late 18th-century France, brilliantly described by Charles Dickens, these may be the "best of times and the worst of times." We orthodontists are fortunate to have largely a demand population to serve, driven by powerful unregulated forces such as vanity. People around the globe value the healthful-looking straight white teeth we can deliver. However, we must be ever vigilant, since orthodontics is a perfect target for the machinations of industrial strategists, plying their wares and wiliness against our often sheltered and naïve view of the business world.

If we assert some skepticism and keep our perspectives science-based, truthful, and patient-centered, we should fare well in these challenging times. If we could possibly recapture the essence of that nostalgic period 40 years ago when experienced, thoughtful orthodontists—applied scientists—were freely and honestly sharing their contributions and new concepts with little noise from the supply industry, that would truly be wonderful. But frankly we cannot expect dreamy outcomes to materialize today by applying rationales from a simpler time, a bygone era. It won't work. Instead, we have to actively think and rethink our field in the context of its present issues and vulnerabilities, now and always. For starters, we need to tweak our training-program requirements and journal formats to give them more real-life relevance. Also, it may be a good idea to dig out and reconsider some of the bright writings offered by savvy thinkers from the golden age of applied science in clinical orthodontics 40 or so years ago. I've highlighted a few here. With a little luck, all this may help assure the best destiny for the specialty of orthodontics. And for those of us who care deeply about it, that will mean a lot.

DEDICATION

This article is dedicated to the memory of Professor Robert J. Isaacson (1932–2018)

REFERENCES

1. Horowitz SL, Hixon EH. *The Nature of Orthodontic Diagnosis*. St Louis, Mo: CV Mosby; 1966:319, 321, 336.
2. Quinn GW. Airway interference and its effect upon the growth and development of the face, jaws, dentition and associated parts. "The portal of life." *N C Dent J*. 1978;61(1):28–31.
3. Quinn GW. Are dentofacial deformities a preventable disease? *N C Dent J*. 1978;61(2-4):5–6, 57.
4. Quinn GW. Airway interference syndrome. Clinical identification and evaluation of nose breathing capabilities. *Angle Orthod*. 1983;53:311–319.
5. Rubin RM. Facial deformity: a preventable disease? *Angle Orthod*. 1979;49:98–103.
6. Rubin RM. Mode of respiration and facial growth. *Am J Orthod*. 1980;78:504–510.
7. Murray RB. Contrasts, considerations, and compromises. *Angle Orthod*. 1956;26:229–240.
8. Dickson GC. The natural history of malocclusion. *Dent Pract Dent Rec*. 1970;20:216–232.
9. Dickson GC. Long-term effects of malocclusion. *Br J Orthod*. 1974;1:63–68.