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THE EDITOR'S CORNER

Orthodontics in the Year 2000

The 20th century in American orthodontics can be thought of as two distinct eras. The first half of the century saw the beginnings of the specialty as we know it today. Angle introduced tooth movement with fixed appliances into a discipline in which labiolingual techniques and removable appliances predominated. Angle also started teaching orthodontics as a unique discipline, and university graduate orthodontic departments proliferated by mid-century. At that time, there were perhaps 1,500 orthodontic specialists in the United States. Delegation was almost nonexistent, and appliances were largely handmade by the orthodontists. Patients were seen every four weeks. Diagnosis was based on the Angle classification of malocclusion.

This first era of the century ended with the Great Depression and World War II, both of which had a significant dampening effect on the demand for orthodontic treatment. Following World War II, the orthodontic specialty took off. The Baby Boom created unprecedented demand for treatment, and graduate schools were able to meet the demand with increased numbers of orthodontic graduates. Demand was also influenced by an increased cultural valuation of health and beauty, and by the development of third-party insurance programs, managed care, and management service organizations.

In the second part of the century, orthodontists began to place greater emphasis on fixed appliances and to lean more toward extraction treatment. Through innovations in materials and methods of using them, we became efficient in controlling tooth movement with systematic procedures. Prefabricated bracket systems and cephalometric formulae allowed us to standardize a number of treatments that seemed to produce satisfactory results in a large percentage of cases. Research programs in universities and in the orthodontic industry developed bonding adhesives and innovations in wire metallurgy. In recent years, various appliances have been designed to reduce the need for patient cooperation, and the pendulum has swung back toward nonextraction treatment.

One of the most significant by-products of the systematization of therapy was the delegation of routine treatment procedures to trained auxiliaries, making it possible to treat many more patients per orthodontist. This trend has been abetted by the technology-based ability to increase the interval between patient visits.

In summing up the story of orthodontics in the 20th century, in spite of these many advances, it must be acknowledged that orthodontic treatment has not changed fundamentally. Diagnostic methods are different, especially since the advent of cephalometrics, but we are still treating toward an "ideal" or "normal" condition. Treatment times have not been greatly shortened; we are not much further advanced in our knowledge of growth or our ability to influence it; our mechanics and force systems are not greatly different; we have not perfected stability of results (although that may not be possible); we are not any farther along in prevention or interception; some of the most basic questions remain unresolved—early vs. late treatment, extraction vs. nonextraction, expansion vs. non-expansion, stability vs. instability, orthopedic vs. orthodontic, orthodontic vs. surgical-orthodontic, growth effects vs. treatment effects; and we are still at odds about the diagnosis and treatment of TMJ disorders and numerous other questions, such as the significance of condylar position and the coincidence of CO and CR.

As the year 2000 dawns, we continue to harbor a vague idea that clinical orthodontics is part science and part art. Vague, because it has never been possible to quantify or even qualify the "art"—to measure it or even determine whether it exists. Measurement has been the hallmark of what has been described as the "science". Actually, measurement has been an effort to eliminate the concept of art.

The challenge for the next century is apparent. Perhaps it will take a new outlook to answer some of the questions yet unanswered, and to revise some of the answers we depend upon today. That new outlook might be called *gestalt*. Webster's Third International Dictionary defines *gestalt* as a "pattern of physical, biological, or psychological phenomena so integrated as to constitute a functional unit with properties not derivable from the sum of its parts". That sounds

like inspired orthodontics.

There appears to be a growing recognition among orthodontists that no two individuals are exactly the same, and that we have been attempting to standardize the non-standard. There may be one best way to treat each orthodontic case, but the path to that end will be impossible to find until we break away from standardization and embrace individualization. If orthodontics becomes a *gestalt* discipline in the next century, clinicians will come to see the head as a globe rather than a flat map.

The computer will be a significant change agent in all aspects of our field. Future computer models will be three-dimensional and capable of taking many more factors into consideration. We may become more concerned with asymmetries in both sagittal and transverse dimensions. We may explore the significance of the cant of the occlusal and palatal planes. We may pay more attention to muscle insertions, muscle strength, joint structure, and paths of closure.

If brackets are still in use, the slots and bases will be milled to the requirements of individual tooth positions and morphology. In addition, we seem to be on the verge of breakthroughs in bone and cartilage biology and genetics that will effect fundamental changes in orthodontic treatment.

There are about 9,000 practicing U.S. orthodontists in the year 2000, but it has been shown that this number will level off and decline early in the 21st century; at the same time, the number of child orthodontic patients will remain relatively high, at least for the next 10-15 years. The baby boom and bust cycle that started in the 1950s, however, will continue to echo for many years to come. As practice sizes increase, more of the daily treatment and administrative tasks will be routinely delegated. Practices may then be structured more along a corporate model—specialized into administrative management, patient management, and treatment management.

While speculating about the future of orthodontics in the United States, we should not overlook the significant contributions of the international orthodontic community. The next century will undoubtedly see a burgeoning of orthodontics worldwide.

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