

Message from the President

by Waldemar B. Szwajkowski

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Waldemar B. Szwajkowski

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You may have read articles on the use of Six Sigma and Acceleration initiatives within 3M Company and other Fortune 500 companies and perhaps have wondered what these management tools really are. We at 3M Unitek have implemented these initiatives and have achieved excellent results using the tools. You will hear from Ajay Myer, our Manager of Research and Development, on the 3M Acceleration Initiative later in this edition.

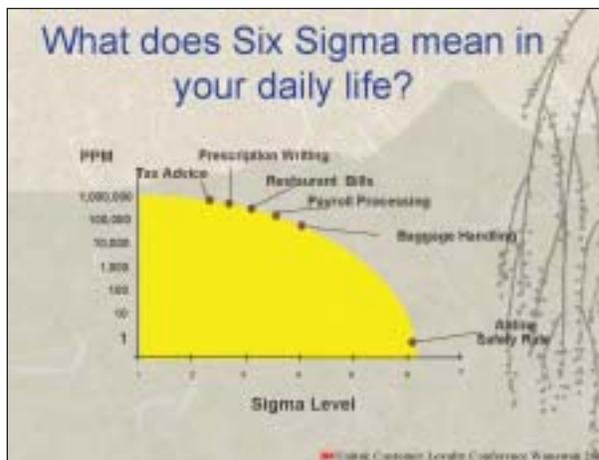
What is Six Sigma? Basically it is:

- A proactive means of achieving excellence in all business processes
- A measurement of performance or improvement
- A data and fact driven approach versus a predominantly intuitive approach
- A methodology to promote continuous improvement, correct and prevent defects

Most of all, Six Sigma is an effective way to increase and accelerate our **business performance** and, in particular, emphasize **quality** in everything we do for our customers.

Six Sigma is a multifaceted approach that addresses all stakeholders in 3M Unitek. For you, our customers, Six Sigma helps us develop better products that meet your needs and increases our responsiveness to those needs. For our employees, it helps develop talent and has energized 3M Unitek tremendously.

Six Sigma is a measure of the number of standard deviations or error rate. The table below shows how this measure impacts our daily life:



Looking at the table shown here, I certainly would have reservations about flying if the airline safety rate was that of tax advice or even payroll processing.

At its root, Six Sigma was predominantly used as a quality and manufacturing tool. 3M Company has taken it a step further by using Six Sigma tools in other business areas.

The article on page 15 by

Ajay Myer, 3M Unitek Manager of Research and Development, explains how we are using the Six Sigma process and the 3M Acceleration Initiative to speed new products to you, while never compromising product quality and performance.

But there are many aspects to orthodontic care beyond products. In our featured article, Dr. Anoop Sondhi presents an overview of the Sondhi™ Signature Treatment System, and how you can consistently deliver excellent treatment by integrating efficiency and effectiveness throughout the treatment process. If you need more information about the Sondhi System, contact your nearest 3M Unitek representative or visit our web site. ■

Visit our web site at
www.3MUnitek.com

• Sondhi™ Signature Treatment System

The Essence of Efficiency

by Anoop Sondhi, D.D.S., M.S.



Dr. Anoop Sondhi received his dental degree from the Indiana University School of Dentistry, and his post-graduate certificate and M.S. in Orthodontics from the University of Illinois in 1977. Following his graduation, he was on the graduate faculty of the Department of Orthodontics at Indiana University. Since 1988, he has been in full-time private practice in Indianapolis, and continues as a Visiting Professor for several graduate programs in orthodontics.

Dr. Sondhi has used indirect bonding for the past 20 years. He has presented seminars and continuing education courses to several dental and orthodontic organizations in the United States, and has been invited to give courses in Canada, Central America, South America, Europe, the Far East, South Africa, Australia and New Zealand. In addition to his orthodontic practice, Dr. Sondhi devotes a significant amount of his clinical work to the diagnosis and management of patients with disorders of the temporomandibular articulation. Dr. Sondhi also serves as a consultant to the American Journal of Orthodontics and Dentofacial Orthopedics.

Introduction

I am a lousy golfer. When asked about my handicap, my stock answer is “my swing!”. Nonetheless, I remain an interested and curious observer of the game. And I find several parallels between the game of golf and the management of orthodontic treatment. For example, if one is adept at tee shots and fairway strokes, but hopeless with the short game and putting, the score will rarely be pleasing. We all know the oft given example that a six-inch putt counts the same as a 250 yard drive. Conversely, if one’s short game is good, but we waste multiple strokes winding our way from the tee to the green, the result will still be undesirable.

If we were to consider an orthodontic analogy, we all know doctors who are skilled at diagnosing cases and developing treatment plans, and inept at placing brackets. While they may eventually finish the case, they tend to take a meandering route to the end result. Conversely, there are doctors who are adept at the biomechanical aspects of treatment, but inattentive to the management of their clinic and practice, and lose ground in treatment due to poor management of patients, inadequate reinforcement of compliance, etc.

My point is simple. On those days when one is playing well, and hitting on all cylinders, it is a joy to finish a good round of golf. It’s just plain fun to walk off the course with a swagger. It should, therefore, be possible to develop the degree of finesse required to manage an orthodontic practice, and the day-to-day management of patients, so that the average day ends with a feeling of accomplishment, not frustration. In fact, since most of us are better orthodontists than we are golfers, I would submit that it is easier to hone one’s orthodontic skills than it is to become a better golfer!

Doing the Right Things Right

I have often spoken on the subjects of Effectiveness and Efficiency. Effectiveness, after all, consists of doing the right things, and Efficiency consists of doing things right. To achieve the degree of symbiotic confluence required to achieve excellence, it has long been my refrain that one must be both effective and efficient – in effect, we must strive to do the right things right.

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Continuing with the analogy with golf, I would like to address some of the issues related to perfecting not just the long game, but the short game as well. We have all heard about the impending change in demographics, and its impact on the number of orthodontists that will be available to treat patients for the next ten to fifteen years. It behooves us to consider that the need for efficiency in each of our offices will increase exponentially as the impending surge of patients starts to show up at our doors.

Effective and Efficient Consultations

(Getting Close to the Pin)

The consultation process serves two primary purposes. Obviously, the doctor is interested in examining the patient, identifying the specific clinical information required to arrive at a good diagnosis and treatment plan, and at establishing rapport with the patient and parents.

I would submit that there is an important additional goal. The consultation process should be structured not only to gain rapport with the patient and parents, but also to impress upon them the thoroughness of the diagnostic process, and to further convince them that they have selected the right doctor for their treatment.

We continue to see a raging debate in our profession regarding the pros and cons of one-step and two-step consultations. Such extremism needs to be tempered. I do feel comfortable with some one-step consultations, for example, when we are treating the third or fourth child in the same family and the case is a relatively straight-forward one. However, the same is not true when we are seeing a patient for the very first time, and do not have an ongoing relationship between the office and the family. In those instances, it could be argued that a two-step consultation permits an additional opportunity to establish rapport, and to impress the patient and parents with the thoroughness and completeness of the diagnostic and treatment planning process.

In an accompanying videotape on “Effective and Efficient Consultations”, which we released last year, we tried to make the case that it is appropriate to dissuade patients and their parents from thinking that the consultation consists merely of receiving confirmation of their preexisting notion that “I need braces, and once the braces are put on my teeth, they will become straight”. With the increasing incorporation of digital technology, permitting instant capture of photographs, radiographs, and digital images of models, the point may become moot. Indeed, we fully anticipate that some of the consultations that we complete in two-steps will become one-step consultations in the near future, simply because of our ability to garner the needed data while the patient is in the office, and to present the complete diagnosis and treatment plan without inconveniencing them with a second visit.

Regardless, the point that I would make here is that the consultation process should be carefully structured to maximize the patient’s understanding of the effort that goes into the process. Further, we generally find that the comprehensive diagnostic process and treatment plan also allows us to specify things like atypical bracket positioning, planning for management of tooth mass discrepancies etc., thereby simplifying the “short game” as we reach the finishing stages of treatment.

The Selection of a Prescription

(Club Selection)

We are all aware of the wide array of bracket systems and prescriptions available on the market today. Clinicians who have proposed specific prescriptions can spend entire days explaining the details and nuances thereof, and the justification for their choice of specific torque and angulations.

In the past, the only way a clinician could test the validity of a prescription, or a specific bracket system, would be to obtain the appliance, and to treat a certain number of patients with it. The progression of treatment could be monitored over one and a half to two years, at which point the outcome could possibly be judged. Add to that the impact of variations in morphology, and the difficulty in comparing like groups of cases. Most of us have been through this process in our practices.

The advent of digital imaging has given us an opportunity to study this information faster, and more adequately. Figures 1 A

and B demonstrate a digitally created dentition, on which the impact of specific bracket systems and bracket placement can be studied. The amount of data, and the degree of detail, that can be evaluated with this process can be overwhelming, and some of the process was reported in a previous article. (“Doing the Right Things Right” by Anoop Sondhi, D.D.S., M.S., *Orthodontic Perspectives*, Vol VIII, No. 1)

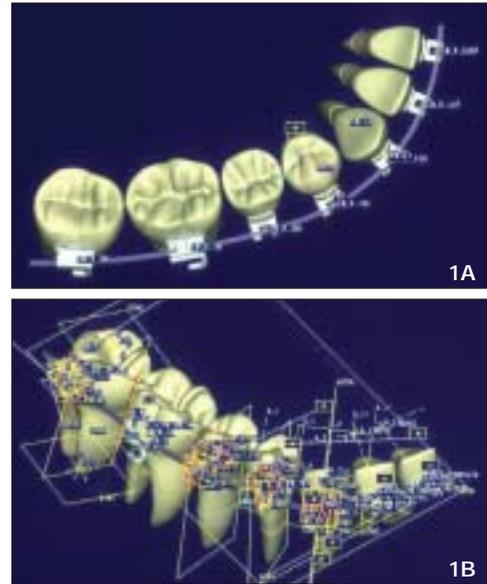


Figure 1A & 1B:

A view of a digitally created quadrant of the mandibular dental arch. A significant number of variables can be studied in the application of orthodontic appliances to the simulated dentition.

Having studied the dentition in all three planes of space with this technology, it was concluded that there were distinct advantages, and some disadvantages, in each of the bracket systems and prescriptions that were evaluated. It was our conclusion that it would be wise to retain those advantages, and to discard the disadvantages, of the different prescriptions. Having done so, a hybrid prescription was developed, and tested, both digitally and in the clinic. The details of this prescription are listed in Figure 2, and Figures 3 A, B and C demonstrate a finished result.

Sondhi™ Prescription		
Maxillary	Torque	Ang.
Central	+22°	5°
Lateral	+14°	8°
Cuspid	+3°	10°
1st, 2nd Bicuspid	-7°	0°
1st Molar (buccal tube)	-10°	7°
2nd Molar (buccal tube)	-14°	10°
Mandibular	Torque	Ang.
Central	-1°	0°
Lateral	-1°	0°
Cuspid	-7°	6°
1st Bicuspid	-11°	0°
2nd Bicuspid	-17°	0°
1st Molar (buccal tube)	-25°	0°
2nd Molar (buccal tube)	-30°	6°

Figure 2:

Details of the Sondhi™ Signature Prescription, a hybrid derived from an amalgamation of the advantages of existing prescriptions, and by discarding the disadvantages.



Diagnosis and Treatment Planning

(Reading the Green)

As old fashioned as it may sound, a thorough diagnosis and carefully established treatment plan are critical to the establishment of a well thought out sequence of treatment mechanics. As a simple example, we have earlier cited the importance of a properly selected prescription. However, as clinicians, we quickly become aware of the need for accommodating variations in human morphology, and realize that the same pattern of bracket placement will not suffice for every kind of malocclusion.

Clinicians have, for years, consciously or subconsciously placed brackets slightly off center for severely rotated teeth, either for overcorrection or to allow for the diminution in archwire activation as the tooth comes into place. Therefore, the bracket placement is not always standardized, and there are a number of occasions where modifying the bracket placement will simplify subsequent case management.

As a simple example, in openbite cases, we strongly recommend that bracket placement be atypical. Figure 4A demonstrates the alignment of brackets in an ideal set-up, on a straight archwire. However, in a patient with an openbite tendency, where the clinician's intent may be to prevent any further opening of the bite, we can choose to place the brackets atypically. Given the desire to prevent any extrusion of the molars, and thereby any pivoting open of the bite, an atypical bracket placement sequence is recommended. (Figure 4B)

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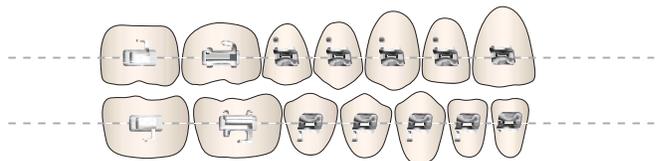


Figure 4A:

Diagrammatic representation of a hypothetical straight wire appliance. The objective would be for all teeth to end up in their proper horizontal, vertical, and transverse positions on a straight archwire.

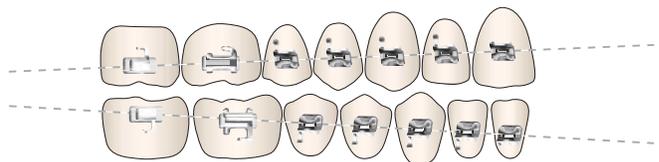


Figure 4B:

Atypical bracket placement recommended for a patient with an openbite, or an openbite tendency. Standard bracket placement would not be appropriate for a patient with this dental and skeletal pattern.

Figure 3A – 3C:

Intra-oral views of a completed case with the hybrid prescription created through a three dimensional graphic analysis. Note the upright canines, due to the decision to discard negative torque brackets for the canines.

It becomes quickly apparent that such an atypical bracket placement for an openbite case would improve control of the vertical dimension during the preliminary alignment of the dentition, when the inadvertent extrusion of a single molar can sometimes push the case out of control. Further, a definite bias in the occlusal plane can be achieved to assist in subsequent finishing of the case. This is an excellent example of the impact of a well thought out treatment plan on subsequent bracket placement and finishing procedures. Figures 5 and 6 demonstrate a clinical example this.



Figure 5A & 5B:

Anterior and lateral views of a dentition at the time of bracket placement. Note the extrusive force exerted on the canine by the initial archwire, and the consequence intrusive vector on the incisors. It could be argued that a stabilizing wire should be placed, with an overlay archwire to extrude the canine.



Figure 6A & 6B:

Anterior and lateral views of the same patient. The maxillary arch has gone through initial leveling with the first .016 Nitinol archwire, with no noticeable opening of the bite. This is attributed to the atypical bracket placement.

It is evident that the patient had a distinct anterior openbite tendency, and the patient and parents had been informed of the possibility that the treatment plan may have to be modified to include orthognathic surgery if a significant openbite should develop. However, it was our opinion that the case may be manageable non-surgically, and bracket placement was therefore planned to be atypical.

Most clinicians would recognize that an initial archwire that is activated for the purpose of extruding the canine would likely cause some intrusion of the incisors and that, if the brackets were placed in standard positions, this patient would likely demonstrate some increase in the openbite following placement of the very first archwire. However, as seen in Figure 6, no such opening of the bite was noted, and control of the case was greatly enhanced.

I draw your attention to the lateral views, which demonstrate the atypical bracket placement I am speaking of. Indeed, the posterior brackets are placed extremely close to the occlusal surfaces of the molars, and the brackets move progressively to the gingival as we go toward the anterior teeth.

It could be argued that such bracket placement is feasible with direct bonding. However, this clinician's choice of indirect bonding as a preferred method of bracket placement is dictated by the ability to effect more precise bracket placement on posterior teeth. Further, it is important that good bond strength be achieved to permit the placement of brackets this far occlusally without risking a higher probability of bond failure. Similar variations are possible to deal with cants of the occlusal plane in not just the vertical plane of space, but also the medio-lateral plane.

Efficiency and Inter-Bracket Distance

(Steel vs. Graphite Shafts)

It has been pointed out, in recent years, that the influx of new alloys and lighter archwires, with their consequently increased load deflection rates, has diminished the significance of an increase in inter-bracket distance in the efficient delivery of treatment mechanics. While it may be tempting to draw such a conclusion, especially when one compares the degree of activation that was feasible with the older stainless steel archwires, I would urge my colleagues to consider the advantages conferred by amalgamating the advantages of the longer acting archwires with enhanced inter-bracket distances. It should, in fact, be argued that the combination allows us to place extremely long acting archwires, and therefore be able to see patients at 10 to 12 week intervals.

We sometimes need to be reminded that patients do not live to come to our offices, and that keeping appointments in our offices is merely one more hassle in their day. Anything we can do to reduce these hassles is greatly appreciated by the patients, especially when it is made clear that there is no compromise in the quality of the outcome.

Figure 7 below, for example, demonstrates a patient with fairly significant crowding in the maxillary anterior segment. Figures 7 A, B and C shows the same patient with the initial



Figure 7A – 7C:
Anterior, lateral and occlusal views of a crowded maxillary arch at the time of bracket placement. The views are presented with and without the archwire tied in, to demonstrate the full engagement possible with the initial archwire due the inter-bracket distance permitted by the design of the Mini Uni-Twin™ brackets.

archwire, an .016 Nitinol archwire, tied in. It could easily be argued that such a complete engagement of the archwire would not be feasible if we were using a standard twin bracket. So, even though we were using a more flexible and longer acting archwire, neither the doctor nor the patient would enjoy its full potential.

Figures 8 A and B show the same patient 14 weeks later, with a new archwire in place. This is an excellent example of the advantages gained with the flexibility of a higher resiliency archwire, along with increased inter-bracket distance. If standard twin brackets had been used in this case, at least one additional appointment, either for a new archwire, or reengagement of the existing archwire, would have been necessary. The impact of this will be discussed later in this article.

One more point needs to be made. The progression to a stiffer archwire earlier in treatment also facilitates earlier control of third order movements, and earlier placement of inter-maxillary elastics.



Figure 8A & 8B:
Occlusal and lateral views of the same dental arch 14 weeks later. Note that the next archwire is a .016 x .022 archwire.

Appointment Sequence

(Driver → Iron → Putter)

The appointment sequence for extraction and non-extraction cases will obviously vary, and there will be additional differences introduced for patients who require conjunctive orthognathic surgery, placement of implants etc. However, for most routine orthodontic cases, a certain degree of standardization should be possible, and this is further facilitated by our paying attention to detail during the initial phases of treatment planning.

During our in-office courses, we routinely bring in scores of patients to demonstrate the archwire sequence, and progression of treatment. It is certainly not uncommon, in routine Class I and Class II cases, for treatment to be completed in approximately nine to ten appointments. This generally involves a total of three archwires, with the finishing archwire usually an .016 x .022 stainless steel archwire. The initial archwire is usually an .016 Nitinol Classic, or an .016 heat activated Nitinol. The transitional archwire is usually an .016 steel archwire, or an .016 x .022 Nitinol archwire.

Lest we get carried away with a discussion regarding the number of appointments, or archwire changes, let's re-establish a fundamental principle – there is no compromising with excellence!! It would make me extremely unhappy if any of this information were construed as a recommendation to let the need for efficiency trump the need for an effective outcome. It is merely my opinion that an excellent outcome is possible in an efficient manner.

It is important that we not sound glib in discussing treatment mechanics, because most clinicians recognize the importance of variation in the application of biomechanics. What I want to emphasize is a carefully thought out sequence of treatment mechanics, supported by accurate bracket placement and early control in the resolution of vertical and anteroposterior discrepancies, followed by minimal finishing details.

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Cost / Revenue Analysis

We are all under constant pressure to control the cost of treatment for our patients, while continuing to generate adequate revenue to support staff salaries, office overhead etc. As a part of the overall cost of providing treatment, I would draw your attention to the impact of additional, unnecessary appointments necessitated by ineffective treatment planning and inefficient delivery of treatment mechanics. Let's analyze some basic statistics involved in the treatment of an average orthodontic case.

The following analysis is an excellent demonstration of the importance of efficiency in biomechanics and appointment sequencing.

Total treatment time = 20 months

1st appt. – Seps. or Bonding Imps.
2nd appt. – Bonding and/or Banding
Last appt. – Debanding and Retainers
(These are constant for every patient)

Bonding Appointment

Direct – Doctor Time – 20-30 mins.
Indirect – Doctor Time – 2-3 mins.

If the patient is seen every

4 weeks – Total appts. = 20
6 weeks – Total appts. = 14-15
8 weeks – Total appts. = 10-11
10 weeks – Total appts. = 8
12 weeks – Total appts. = 6-7

The maximum efficiency appears to be achieved when patients are seen at 8-10 week intervals, since we must strike a balance between the appointment intervals, and the need to stay in control of the treatment.

Cost Per Appointment

Assuming a hypothetical treatment fee of \$4,500, and a fixed cost of \$1,000 per bonding and debonding, the fee generated per appointment would be...

4 week intervals – \$175 per appt.
6 week intervals – \$240 per appt.
8 week intervals – \$350 per appt.
10 week intervals – \$435 per appt.

Once we realize the cost per appointment in the illustration above, the importance of minimizing bracket repositioning appointments becomes clearer. The rules should be simple: Schedule as few appointments as possible, and do everything possible at each appointment. One of the concerns I sometimes hear from our colleagues is that patients who are seen at 8, 10 or 12 week intervals may not pay their treatment fees on schedule. Indeed, I frequently have colleagues tell us that their patients are in the habit of making their payments during their monthly visits to the office.

There is absolutely no question that it is not only possible, but necessary, to dissociate a monthly fee payment schedule with the actual office visits for archwire changes, adjustments, etc. This is where the support mechanisms for our Signature Series treatment system come into play. Appropriate management materials, forms, patient education materials, and presentation scripts to facilitate the implementation of these concepts have been prepared, and are presented as an integral part of the overall system.

Conclusion

In every facet of orthodontic treatment and practice management, there are a number of choices available to the orthodontic practitioner. There are different schools of thought on practice management, office and staff management, and the choice of biomechanical treatment strategies.

Over the past 20 years, we have worked to evolve and refine a comprehensive system, one that allows the efficient delivery of an orthodontic treatment result with a minimum level of inconvenience and discomfort for the patient, the orthodontist, and the orthodontic staff. The seminars on this system will emphasize efficiency in appliance design and placement, and management systems designed to deliver excellence in the treatment result. ■

THE BOTTOMLINE

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• Transbond™ Plus Self Etching Primer: A Significant Advance in Bonding Procedure

by Andre Ruest, D.M.D.



Dr. Ruest received his D.M.D. from the University of Montreal in 1984 and his Certificate in Orthodontics from the University of Pennsylvania, School of Dental Medicine, Philadelphia, in 1994. He holds the positions of Adjunct Clinical Professor in the Dept. of Orthodontics at the University of Pennsylvania, Philadelphia, and is Head, Orthodontic Section, Dental Department, Montreal Jewish General Hospital. Married with two children, Dr. Ruest maintains a private practice near Montreal, Quebec, Canada.

Imagine a scene in your office: You have just finished rebonding three broken brackets in Johnny's mouth ("I swear, Doc, I was lying on the couch when it happened"). Naturally, the broken brackets were in three different quadrants. With the cleaning, rinsing, isolating, drying, etching, rinsing again, isolating again, drying again, etc. you are now 20 minutes behind schedule.

⑩

Jenny, who came in on time, has been waiting in the adjacent chair while you can see her mother pacing anxiously by the reception desk. As you get up to move to Jenny's chair, her mother glares at you with an accusing stare. You quickly dive towards Jenny's chair hoping to avoid any argument. As you sit down while pretending to be totally absorbed by her chart, you tell yourself that this situation could have been a lot less stressful if you didn't have to deal with so many technique-sensitive steps to achieve proper bonding.

Although this scenario is hypothetical, time loss is a reality in every practice. As orthodontists, we are constantly trying to find ways to make our procedures more efficient and less stressful for both the patient and the orthodontic team. Obviously, being more efficient brings added benefits to our patients. Patients of all ages want to spend as little time as possible in the chair.

Efficient procedures delivering maximum therapeutic return can go a long way towards reducing chair time. Reducing time spent on tedious, repetitive procedures allows more time to be used for delivering efficient bio-mechanical treatment. Better mechanics means more successful correction of their malocclusion. More comfortable procedures mean happier patients whom are more likely to cooperate during treatment, etc.

Orthodontists in the early part of the 20th century were faced with very long and protracted procedures for the initial bandings. Typically, during multiple and painful sittings, they meticulously adapted, pinched and welded bands which were followed by long cementation times. The introduction of preformed bands allowed for a huge gain in productivity.

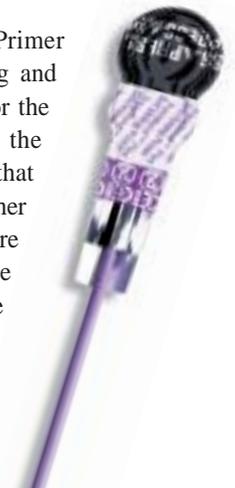
Then, when traditional bonding was introduced, it eliminated the need to band every tooth, again providing another quantum leap in productivity. However, the number of steps needed to properly achieve bonding has made the procedure quite technique sensitive (Buonocore, 1955).

One of the early difficulties in bonding brackets was the use of self-curing materials, which limited the amount of time available for proper bracket positioning. The technique of indirect bonding was a partial answer to this difficulty, but it still involves a fair amount of time (albeit away from the chair) in terms of preparation. The introduction of light-curing adhesives allowed a significant amount of control to proper bracket positioning, however there were still many steps involved in properly etching the teeth prior to actual bonding.

In the 1990's, 3M Unitek's innovative APC™ Adhesive Coated Bracket System contributed to reducing the amount of time for bonding by precoating the brackets with light-cure adhesive. This reduced the time spent at chairtime dispensing, mixing and applying adhesive on each bracket prior to bonding.

But back to bonding today. The number one enemy to proper bonding is moisture. With the traditional bonding technique, there are many opportunities for moisture contamination due to the many different steps involved and also because of the amount of time needed.

Transbond™ Plus Self Etching Primer minimizes the steps involved in bonding and concurrently shortens the time needed for the process. The orthodontist thus has the opportunity to reduce bond failures that result from moisture contamination. In other words, having fewer steps in the procedure increases efficiency both by reducing the number of steps and by minimizing the possibilities for moisture to contaminate the field, which can result in rebonds.



There are a number of significant advantages to the system. First, the time savings can be quite dramatic. In our practice, we measured the preparation time needed for bonding a single tooth with the traditional acid-etch technique, and found that it takes approximately 110 seconds. With Transbond Plus Self Etching Primer, I've found that this has been brought down to 25 seconds (see table 1), although these times may be different for your practice.

You will notice that the longest amount of time with both the Transbond Plus Self Etching Primer and traditional bonding is spent while isolating the tooth from moisture contamination. Even though Transbond Plus Self Etching Primer can tolerate small amounts of moisture, it is still always best to make sure that there is no moisture contamination of the tooth to be bonded after the etchant/primer has been applied.

A second advantage, related to the timesaving, is that, because of the fewer steps required, unscheduled rebonds can have a much lower impact on the day's program flow. Whether it's the emergency broken bracket (they still happen when patients eat rocks for lunch!), or the repositioning of a bracket to achieve desired tooth movement, the procedure can be easily inserted into the schedule because it takes so little time and the possibilities for things to go wrong are thus reduced.

Third, I've found that the procedure is comfortable for those patients who cannot stand having a rush of water in their mouths, as is necessary to rinse off etching material. Again, this can help to create a relaxed experience for the patient, which leads to their cooperation.

Fourth, when we were using the traditional method, the etchant was applied to the tooth using a small syringe and needle. Some of our patients unfortunately associated this step with "giving them a needle" and they would panic. Now, the only thing they see is a small brush applicator, which is a much less threatening sight.

Items to watch:

1. Make sure the first blister has been completely voided of all of its liquid into the second blister. If not, then the liquid resin necessary for bonding with the composite adhesive is not properly mixed into the product and bond failure is very likely.
2. Make sure to RUB the liquid onto the tooth surface for at least 3 seconds per tooth. Just painting it on without rubbing leads to lower bond strength.



3. Make sure that the tooth retains a glossy appearance after the liquid has been rubbed on and a gentle airburst has been delivered. If the tooth surface dries up quickly, then it probably means that the mixture has not been thoroughly mixed.
4. Do not blow away excess material onto gingival tissue. It causes a caustic reaction resulting in a temporary blanching of the tissue. Deliver the gentle air burst away from the gingival tissue.

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Now back to our hypothetical scenario: Let's say that instead of being 20 minutes behind schedule, rebonding Johnny's bracket using Transbond Plus Self Etching Primer might only put you behind by about 5 minutes, while leaving you confident that you are still providing a high-quality service to your patients while respecting their time. That's the kind of efficiency gain we would all like to achieve.

Given the facts, I believe that Transbond Plus Self Etching Primer from 3M Unitek is probably one of the most significant advances in efficient bonding since bonding's inception. ■

Table 1

Bonding Preparation for a Single Tooth*	
Traditional	Transbond™ Plus Self Etching Primer
<p>TOOTH PREPARATION</p> <ul style="list-style-type: none"> - Isolate tooth = 20 seconds (Cotton rolls, suction tip, etc.) <p>ETCH/PRIME</p> <ul style="list-style-type: none"> - Apply etching material = 5 seconds - Etch tooth = 30 seconds - Rinsing off etching material = 30 seconds - Re-isolate tooth = 20 seconds (Cotton rolls, suction tip, etc.) - Paint on liquid resin = 3 seconds - Blow off excess resin = 2 seconds - Bond Bracket 	<p>TOOTH PREPARATION</p> <ul style="list-style-type: none"> - Isolate tooth = 20 seconds (Cotton rolls, suction tip, etc.) <p>ETCH/PRIME</p> <ul style="list-style-type: none"> - Rub on one-step primer = 3 seconds - Blow off excess = 2 seconds - Bond bracket
Total time = 110 seconds/tooth	Total time = 25 seconds/tooth

* Data gathered by Dr. Ruest and staff during office procedures. Results may vary from practice to practice.

• The Art of Dolphin Imaging's Arnett/McLaughlin Interactive Treatment Analysis

Part I. The Arnett Soft Tissue Cephalometric Treatment Planner

by Chester Wang

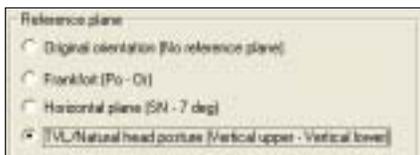
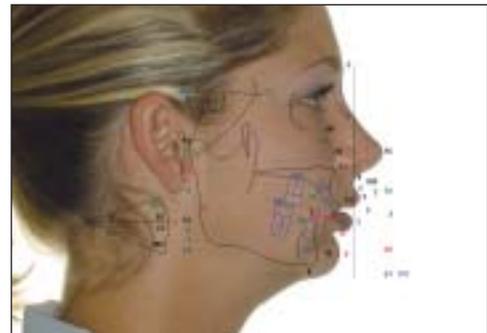


Mr. Chester Wang is a pioneer member at Dolphin Imaging and has been the managing director of Dolphin since 1996. Mr. Wang lectures and works extensively with orthodontic practices worldwide on effectively utilizing technology. Prior to Dolphin, Mr. Wang was a software engineer at Xerox and IBM and received his Bachelor of Science in Mathematics and Computer Science from the University of California in Los Angeles.

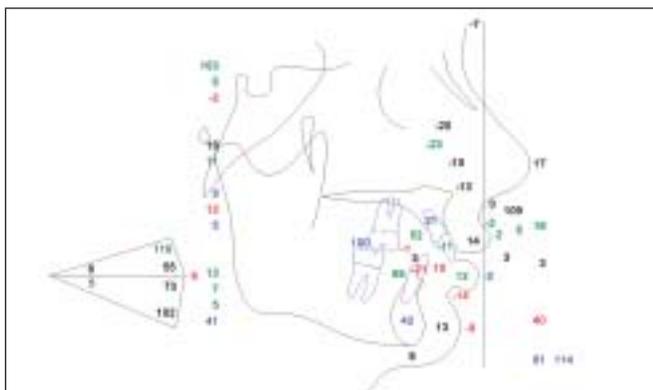
Dolphin Imaging's newest software release is the Arnett/McLaughlin Interactive Treatment Analysis. Designed by Dr. G. William Arnett and Dr. Richard McLaughlin, the software consists of two treatment planning modules that incorporate proven principles from thousands of cases and years of clinical experience. The software was developed as part of a strategic alliance between Dolphin and 3M Unitek, and is fully compatible with the MBT™ Appliance System. This article summarizes the Arnett Soft Tissue Cephalometrics™ module. The next issue will address the McLaughlin Dental VTO™ module.

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Achieving optimum facial harmony and occlusal correction are the goals of Arnett Soft Tissue Cephalometrics (Arnett-STC™). Arnett STC has two distinct components: soft tissue cephalometric analysis (STCA™) and soft tissue cephalometric treatment planning (CTP™). The uniqueness of this analysis is that it utilizes the soft tissue profile as a critical guide to tooth placement and occlusal correction. Contrary to most 'traditional' cephalometric analyses that use the Frankfort plane or the Sella-Nasion plane as reference, the Arnett-STC relies on the natural head posture and True Vertical Line.^{1,2}



You may re-orient the cephalometric tracing to the natural head posture.



The "Arnett/McLaughlin" analysis tracing consists of 50 comprehensive measurements, color-coded based on the norm.

You may perform the STCA with a patient's image and the digitized tracing.

After an "Arnett/McLaughlin" analysis tracing is digitized in Dolphin, 50 comprehensive measurements are displayed, color coded based on the standard deviation of the value and against the norm.² You may perform the STCA with a digitally-traced lateral cephalometric image or with a patient's image superimposed with the digital tracing.

The software includes an optional TreatmentWizard™ to streamline the diagnostic and planning process. It guides the clinician through a 7-step Arnett soft tissue cephalometric treatment plan (CTP). The steps are³:

1. Maxillary incisor inclination (dental movement)
2. Mandibular incisor inclination (dental movement)
3. Maxillary incisor position (maxillary surgical movement)
4. Overbite (autorotating of the mandible)
5. Overjet (mandibular surgical movement)

Continuing Education Schedule

Products that make your life easier.

DATE	SUBJECT	PRESENTER(S)	LOCATION
12/9/02	"Current Concepts in Orthodontic Treatment with Preadjusted Appliances"	<i>Dr. Anoop Sondhi</i>	Illinois Ortho Society
1/10/03-1/12/03	MBT™ System – In-Office Seminar Puget Sound Study Group	<i>Dr. Richard McLaughlin</i>	San Diego, CA
1/18/03	"The Aesthetic Practice"	<i>Dr. Randy Kunik</i>	Oklahoma Ortho Society
1/19/03-1/22/03	MBT™ System – In-Office Seminar	<i>Dr. Richard McLaughlin</i> <i>Dr. Terry McDonald</i>	San Diego, CA
2/22/03-2/23/03	The Bottom Line – University Programs® – 2-Day Seminar	<i>Dr. Terry Sellke</i> <i>Dr. John McDonald</i> <i>Dr. Robert Norris</i> <i>Dr. Tom Ziegler</i> <i>Mr. Bill Poss</i>	Arcadia, CA
3/7/03	The Bottom Line – One-Day Programs® for Practicing Doctors and Key Staff	<i>Dr. Terry Sellke</i> <i>Mr. Bill Poss</i>	Orlando, FL
3/7/03-3/9/03	SUMMIT in Las Vegas	<i>Dr. Richard McLaughlin</i> <i>Dr. John McDonald</i> <i>Ms. Lori Garland Parker</i>	Las Vegas, NV
3/14/03-3/15/03	"The Essence of Efficiency" – In-Office 2-Day Seminar	<i>Dr. Anoop Sondhi</i>	Indianapolis, IN
3/15/03-3/16/03	The Bottom Line – University Programs® – 2-Day Seminar	<i>Dr. Terry Sellke</i> <i>Dr. John McDonald</i> <i>Dr. Robert Norris</i> <i>Dr. Tom Ziegler</i> <i>Mr. Bill Poss</i>	Mystic, CT
3/20/03-3/23/03	The Bottom Line – Practiceworks User's Meeting for Practicing Doctors and Staff	<i>Dr. Terry Sellke</i>	Atlanta, GA
3/27/03	MBT™ System	<i>Dr. Richard McLaughlin</i>	Massachusetts Assoc. of Ortho
3/28/03-3/29/03	MBT™ System	<i>Dr. Richard McLaughlin</i>	South Carolina Assoc. of Ortho
3/29/03-3/30/03	The Bottom Line – University Programs® – 2-Day Seminar	<i>Dr. Terry Sellke</i> <i>Dr. John McDonald</i> <i>Dr. Robert Norris</i> <i>Dr. Tom Ziegler</i> <i>Mr. Bill Poss</i>	Franklin, TN
4/4/03	The Bottom Line – One-Day Programs® for Practicing Doctors and Key Staff	<i>Dr. Terry Sellke</i> <i>Mr. Bill Poss</i>	Gurnee, IL
4/5/03-4/6/03	The Bottom Line – University Programs® – 2-Day Seminar	<i>Dr. Terry Sellke</i> <i>Dr. John McDonald</i> <i>Dr. Robert Norris</i> <i>Dr. Tom Ziegler</i> <i>Mr. Bill Poss</i>	Baltimore, MD
4/11/03-4/12/03	SUMMIT at Whistler	<i>Dr. Richard McLaughlin</i> <i>Dr. Sonia Palleck</i> <i>Dr. Patrice Pellern</i> <i>Dr. Charles Rodrigue</i>	Whistler, Canada
5/1/03	FOR Meeting - Vertical Dimension Orthodontics	<i>Dr. Terry Sellke</i>	Ritz Carlton Hotel Maui, Hawaii
5/3/03	AAO – Doctor and Staff Program	<i>Dr. Terry Sellke</i>	Hawaii
5/5/03	AAO – Doctor Program – <i>Power of Vision</i>	<i>Dr. Terry Sellke</i>	Hawaii
5/6/03	AAO – "Seven Steps for Highly Effective Bonding"	<i>Dr. Robert Miller</i>	Hawaii
5/9/03-5/10/03	The Bottom Line – Study Group® – 2-Day Seminar	<i>Dr. Terry Sellke</i>	Hawaii

3M Acceleration: Product Development in Perspective

by Ajay Myer, 3M Unitek Manager of Research and Development



3M is known worldwide for its unique culture of **innovation** and the broad technology base that has allowed us to bring out new products to meet the needs of our customers. While we are the envy of many companies and have been very successful and introduced hundreds of products built on strong technology platforms, we realize that product development, like all processes,

can be improved. This is what 3M Acceleration, a prime corporate initiative, is all about.

3M invests over \$1 Billion (U.S.) every year in Research and Development. Our challenge is to be more efficient than ever in using these invested dollars to generate products our customers demand. In order to increase the velocity of bringing products to market, there must be parallel development of technology platforms and manufacturing processes with strong involvement of marketing and sales to ensure that the voice of the customer is represented.

In Six Sigma terminology, we ask ourselves what is “entitlement”, or in other words, how good can we be? We started by identifying all the R&D programs ongoing in each of our businesses and technology centers, and we evaluated the potential impact the programs would have from a larger 3M

perspective. The top 75 programs, which represent the most critical market needs, are fully resourced and tracked to ensure that we execute them quickly and successfully.

We at 3M Unitek are very excited and involved with Acceleration as we work with 3M laboratories and technology centers to speed up the development process on a number of products. Over the last year and a half, we have introduced several new products that are receiving good reviews. In the area of bonding, our APC™ II Adhesive Coated Appliance System along with Transbond™ Plus Self Etching Primer and our high intensity light have really helped reduce chair time and make bonding a very reliable and efficient process. Our Victory Series™ LP Low Profile Brackets enhance patient comfort and our AlastiK™ Easy-to-Tie ligatures really simplify ligation.

The R&D team at 3M Unitek consists of highly skilled and extremely talented people with very diverse backgrounds. With these skill sets, we are very well equipped to address challenging situations. With the help and assistance of our 3M resources in laboratories and technology centers around the world, we are able to find creative solutions to challenges you face in your practices. As we develop new products, we are working with orthodontists to ensure that your input is incorporated into the design. I am excited with several new products we have in development and am confident that you will be pleased with their performance. ■

Continuing Education Schedule – continued

DATE	SUBJECT	PRESENTER(S)	LOCATION
6/5/03-6/8/03	The Bottom Line – Comprehensive Series® – USA – Session I	Dr. Terry Selke	Gurnee, IL
6/26/03-6/27/03	“Full Arch Indirect Bonding – MBT™ Rx” – In-Office Seminar	Dr. John Kalange	Boise, ID
6/30/03-7/2/03	SUMMIT at the Greenbrier	Dr. Richard McLaughlin Dr. G. William Arnett	Greenbrier, West VA
7/13/03-7/16/03	MBT™ System – In-Office Seminar	Dr. Richard McLaughlin Dr. Terry McDonald	San Diego, CA
7/24/03-7/25/03	“Full Arch Indirect Bonding – MBT™ Rx” – In-Office Seminar	Dr. John Kalange	Boise, ID
8/1/03	World Ortho Congress	Dr. Richard McLaughlin Dr. Anoop Sondhi	San Diego, CA
9/4/03-9/7/03	The Bottom Line – Comprehensive Series® – USA – Session II	Dr. Terry Selke	Gurnee, IL
9/13/03-9/14/03	“The Essence of Efficiency” – In-Office 2-Day Seminar	Dr. Anoop Sondhi	Indianapolis, IN
9/19/03-9/20/03	“Full Arch Indirect Bonding – MBT™ Rx” – In-Office Seminar	Dr. John Kalange	Boise, ID
9/19/03-9/20/03	MBT™ System – MW Region Course V	Dr. Richard McLaughlin	To be determined
10/3/03-10/4/03	“The Essence of Efficiency” – In-Office 2-Day Seminar	Dr. Anoop Sondhi	Indianapolis, IN
10/24/03-10/25/03	SUMMIT in New Orleans	Dr. Richard McLaughlin Ms. Lori Garland Parker	New Orleans, LA
10/25/03-10/26/03	The Bottom Line – University Programs® – 2-Day Seminar	Dr. Terry Selke Dr. John McDonald Dr. Robert Norris Dr. Tom Ziegler Mr. Bill Poss	St. Louis, MO

For more information, please call the 3M Unitek CE HOTLINE at 1-800-852-1990 ext. 4649 or 626-574-4649.

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Summit 2003

Plan for a great year of Summits from 3M Unitek

March



March 7~8, 2003
Monte Carlo Hotel – Las Vegas

*Occlusion and the TMJ in
Orthodontic Treatment*

Dr. Richard McLaughlin

*Understanding the MBT™ System
for Orthodontic Treatment*

Dr. John McDonald

*Organizational Management of the
Orthodontic Practice – A Team Approach* and

Exploring the Patient Manager System

Ms. Lori Garland Parker

June/July



June 30 ~ July 2, 2003
The Greenbrier –
White Sulphur Springs,
West Virginia

*Interdisciplinary Surgical
Treatment Planning* and

*Enhancing Outcomes Utilizing the
MBT™ System Arnett/McLaughlin
Treatment Analysis*

Dr. Richard McLaughlin and Dr. G. William Arnett

October



October 24 ~ October 25, 2003
Watch for information on the
Summit in New Orleans

Dr. Richard McLaughlin and Ms. Lori Garland Parker

*Seating is limited, so register early
and secure a seat!*

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