Tanner vs Universal vs Michigan Full Arch Appliances

I believe the Michigan appliance gets its start from Ramford and Ash in Michigan. The Universal is credited to the Pankey Institute. The Tanner appliances if credited to the late Dr. Henry Tanner. I know more about the Tanner and I hope I have not mischaracterized either the Michigan or the Universal appliances. Anyone know what a Fox Appliance looks like (Cliff Fox)?

Preferred Arch
Michigan: maxillary arch (almost always). Any appliance on a Maxillary arch can not use fremitus effectively as a tactic for adjustments. Fremitus is a function of the maxillary teeth more than the mandibular ones.

Universal: mandibular arch is preferred, but can place on the maxillary. Generally placed on the arch that is the most crowded or most irregular. Universal may have a “frog-eye” look on the anterior so the maxillary cuspids can contact on their cusp tips. This greatly increases the vertical dimension of the appliance verses a Tanner.

Tanner is almost always to be on the mandibular arch

Tactics to Adjust
Michigan and Universal encourage you to look at the ink and follow your eyes. The mouth is treated similarly to as if it were an articulator. These are quicker to adjust.

Tanners are driven by tactile, visual and auditory fremitus. Ink on the appliance is a secondary verification. Tanners take more time to adjust. You try to make the fremitus with the appliances less than without the appliances. You must understand fremitus to successfully adjust a Tanner.

Posterior Occlusion
All of them have all the posterior teeth (that are easily available) contact in CR to = maximum intercuspation (MIC). The Universal and Michigan encourage you to make the posterior flat, really flat, which increases the vertical dimension of the appliance. The Tanner will have the posterior cusps in slight depressions, centered into the depression.

Anterior Occlusion in CR and MIC
When the patient taps or presses on their posterior teeth, the anterior teeth will tend to touch in CR and MIC on the Universal and Michigan. The anterior teeth will generally not touch in the Tanner.

The Universal encourages the tips of the cuspids to always touch the appliance on a flat plane resulting in the “frog-eyes.”
Anterior Disclusion
Michigan and Universal try always to get the disclusion to start with the cuspids, and then transfer to the incisors in lateral strokes. The Michigan and Universal establish protrusive disclusion on the central incisors. Disclusion on the Universal is as flat as you can, the Michigan is a bit steeper, creating a cuspid lift, if you will. Essentially with the Universal and the Michigan, all occlusions that patients might have are converted into an Angle’s Class I disclusion, even open-bites and total class III cross-bites.

Tanner Appliances duplicate the anterior disclusion that the patient has and tries to improve it within the limits that may be equilibrated or restored with minimum number or appropriate restorations. For Class I patients the disclusion is similar to the Universal or Michigan but it is generally a bit steeper, like the patient has.

Class III total cross-bites have a similar disclusion on the appliance to the natural teeth. Anterior open-bite patients, their appliances are anterior open-bites. If a tooth cannot possibly participate in disclusion on the natural teeth, neither does the Tanner. This makes developing a smooth disclusion harder.

Anterior disclusion is generally immediate on the Universal and the Michigan; the Tanner may have brief guidance on posterior teeth on a flat centrum area before the anterior teeth disclude. Give this choice to a patient, and they almost always prefer the centrum area, though they will tolerate immediate disclusion. Ya just have to ask ‘em and give ‘em permission to voice their preferences! What a novel concept!

If the person has a horizontal overlap of 3-4 mm in their given natural teeth, the Tanner appliance will have the same horizontal overlap and therefore allow group function disclusion on the posterior teeth before the available anterior teeth disclude.

Group function or disclusion is defined by the most posterior tooth that participates in the disclusion. All Universal and Michigan appliances have the most posterior tooth that participates in the disclusion be the cuspid. The Tanner appliances allow the mesial of the first molars or bicuspids to participate in the disclusion if it is appropriate and fremitus is reduced and comfort is improved. Practitioners who make Tanners understand that group function can be healthy and cuspid rise may be unhealthy.

Other
All of them provide parafunctional control and relief of pain when properly refined. Only the Tanner can provide a roadmap for the dentist to test the changes the dentist is hoping to make through equilibration or restoration; to see if the patient’s fremitus is reduced and any pain goes away.
All of the appliances should be done on a semi-adjusted articulator, mounted in the best “CR” that you can. Condylar guidance is critical for many Tanners (especially on high mandibular planes or shallow condylar guidance patients), it is not as necessary with the Michigan or the Universal. Most Universal and Michigan’s are made on hinge articulators, though they are not taught that way.

You can call a Michigan or a Universal a mouthguard, a splint or a bite splint and they will appreciate the compliment. A Tanner is an appliance, never a simple splint or mouthguard. Just like a preformed ION or slapped in acrylic may be a temporary crown, but a finely crafted provisional restoration is another creature.

Most Tanners, many Universals and few Michigans are relined directly in the mouth. Most Tanners are made by the dentist; Universals and Michigans are mostly made by the lab technicians.