The concept presented here aims, above all at the prevention of temporomandibular dysfunctions following restorative treatment of asymptomatic patients. It is designed to reduce the risk of overstressing or damaging the masticatory system. The step-by-step procedure is eminently practical and leads to functional restorations that are easy to adapt to. Close cooperation between practice and laboratory is kept in mind throughout.

The clear and simple terminology and vast number of high-resolution images and computer-generated illustrations have contributed to a very encouraging success amongst German dentists. Therefore, I am convinced that this international edition too, will provide a new perspective to functional restorative dentistry in the new millennium.

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M. Oliver Ahlers
Simulation of Occlusion in Restorative Dentistry
The Artex System
An Up-to-Date Concept Regarding Facebow-Recordings, Articulators and Measuring Instruments

Foreword to the Second Edition

Microbial hard tooth structure damage and periodontal diseases were the main focus of dental medicine for many years. A new situation is now arising due to inevitable developments in society. As in other medical disciplines, more effort is now being directed towards prevention. Prophylactic measures aimed at decay and periodontitis are gaining importance parallel to prevention of functional interferences and other diseases of the masticatory system. Irrespective of how many teeth are to restore, for a long-term prognosis the dental work has to be functionally oriented.

This handbook describes current concepts in diagnostics and treatment developed in our clinic and is meant as a guideline for general practitioners. The author’s systematic presentation - with a continuous chapter buildup and generous illustrations - is apt to encourage anyone who until now has kept away from the field of functional diagnosis and treatment.
artex® system - the perfect communication between dentist, dental technician and the patient.

The basic concept behind all Artex articulators
A sturdy construction to guarantee receptor-sensitive accuracy
↔ manufacturing precision <20 μm (<2/1000 mm).
This is simultaneously a prerequisite for calibrating articulators using a magnetic plate system (Splitex), i.e. making models/work interchangeable.

Prosthetic orientation points and planes are clearly defined on all equipment and marked for training purposes:
1 Reliable, reproducible centric with quick centric system; the starting point for every movement.
↔ check position for statics
2 Bonwill triangle with sides 110 mm long, formed from the intercondylar distance and the incisal point at a Bailkwill angle of 25°.
3 Average-value marking of the plane of occlusion in the incisal pin and in the columns.
4 Incisal needle, when fully inserted, marks tip of Bonwill triangle.
5 Scaled 15 mm incisal guide pin, adjustable -5 mm to +10 mm.
6 Incisal pin holder can be used as axis plane indicator (step as rest for facebow/transfer stand)
7 Incisal table with swallow-tail guide for detachable adaptation of individually-produced incisal table made of self-curing resin.
8 Two interchangeable incisal clip attachments (10° and 20°)
9 Curved progression of the condyle path corresponding to the anatomical original. This results in a degressive angle of inclination, in other words, the molars disclude more quickly in the first third of anterior and lateral movement.
10 Axis mean point for adapting facebows; open to any transfer of maxillary cranium/axis relationship.
11 Support pin for maxillary part of the articulator when open.
Determining the accuracy of articulator interchangeability and hinge axis reproducibility

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Statement of Problem. It has been reported that articulators are interchangeable, which means that a clinician should be able to use one articulator and send casts to a dental laboratory with the assurance that the casts will be remounted with positional accuracy on a similar articulator.

Purpose. The purpose of the study was to determine whether mounted casts could be transferred from 1 articulator to another with positional accuracy and whether the hinge axis was reproducible in each of the articulators tested.

Material and Methods. This study compared left and right second premolars and first molar occlusal contact areas with respective contact areas of like-mounted casts. Five calibrated Whip Mix 3040, 5 calibrated Girrbach Artex AL, and 5 calibrated KaVo Protar articulators were tested. Impact-resistant resin casts mounted in occlusion on 1 articulator were transferred to 4 like articulators. Each of the 5 articulators of each brand was opened and closed 10 times. Ten vinyl polysiloxane right and left posterior interocclusal records of the occluded casts were made for each articulator. The use of a computerized image analysis program provided quantitative measurements of light transmitted through the occlusal records. A Kruskal-Wallis test was used for each of the 4 independent variables of the study (molar differences, premolar differences, left differences, right differences). By using a calibrated grid, a numerical assessment of positional changes was made in millimeters.

Results. None of the articulator systems was found to be exact, and no single articulator was an exact duplicate of another (P<.01). The Whip Mix articulator showed greater deviation both in hinge axis repeatability and in articulator interchangeability than the KaVo. The Artex articulator provided the most consistent hinge axis repeatability and interchangeability of the 3 brands of articulators.

Conclusion. The Artex brand reproduced dental cast positions more consistently than the other articulators tested. (J Prosthet Dent 2001; 85:236-45.)

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Optimisation of the positioning of the arbitrary face-bow with the aid of the „Leipzig nasion“

H. A. Jakstat, K. Kroszewsky

Mounting the face bow dependent on the patient’s position. Two methods for mounting the arbitrary face bow have been compared regarding the influence on the reproducibility of the transfer. Method A (Control): the patient is placed in an upright position. The novel nasion support is fixed firmly without control of the exaggerated force. Method B: the patient is placed in a lying position. A novel nasion support is used, which limits the force delivered by the nasion support to 3 N. In a cross-over design 29 students without any practical experience used both techniques in a randomized order. XYZ-coordinates of three predetermined sites of all mounted casts were measured. Standard deviation was taken as a measure for reproducibility. In sagittal plane and vertical plane the standard deviation of method B was significantly (p<0.05) smaller, in horizontal plane both methods showed no statistically significant difference. Therefore placing the patient in a lying position and using a force-controlled nasion support is strongly recommended.

Keywords: nasion support, arbitrary face bow

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THE ARTEX ARTICULATION SYSTEM: MORE THAN A MOVEMENT SIMULATOR

Fundamental Principles for selecting an articulation system

By Karl Girrbach, Pforzheim, Germany

Precision, aesthetics and function. Three vital criteria, which must be considered when making prosthetics, that are to fit the individual patient. These criteria must harmonize to form one unit, as this is the only premise, which ensures the patient’s well being. In proper patient care, function, without a doubt, takes on special significance. Therefore, all aspects, which will contribute to the most natural and functional replacement of lost tooth structure, must be given particular attention. Karl Girrbach has taken a critical look at modern articulators and presents – to some extent in his own interest – his artex system in the following article. He comes to several other conclusions regarding this subject that also apply to other systems and which should be of interest to our readers.
Study by Prof. Dr. Georg Meyer, Senior Physician Dr. Bernhardt Olaf, Theresia Asselmeyer Theresia, M.A.

Up-to-date diagnosis and therapy methods for functional disorders

Functional sequences in the masticatory organ
Functional disorders in the masticatory organ
Exemplary patient case

1a. Anamnestic patient consultation
1b. Clinically manual functional diagnosis
   (according to Krogh-Poulsen)
1c. Intraoral gaps, clinical occlusion diagnosis
2. In case, an arthopathy is suspected, the following intensive examination is effected: Manual, instrumental and/or imaging TMJ diagnosis
3a. In case, interferences between the occlusal surfaces
   and/or the TMJ function (e.g. centric premature contacts, infraocclusion, dysharmony) are suspected, an instrumental occlusion diagnosis is made in the articulator by means of a centric registration.
3b. Confirmation of the suspected diagnosis or verification of the centric registration through therapeutic bite guard aids (centric splint)
"Praxisrelevante interdisziplinäre Aspekte in der zahnmedizinischen Funktionsdiagnostik und Funktionstherapie"
Further basic reading

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1123 Reproducibility of two methods for mounting maxillary casts in an individual articulator

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The benefit in using arbitrary face-bows in restorative therapy has been discussed controversially (Piehslinger et al. 1995, Choi et al 1999, Bowley and Morgano 2001). A factor questioning clinical studies. On this issue is the participant’s knowledge of conditions, which may influence the outcome. A more evidence-based information appears mandatory.

Objectives: The aim of the study was to determine the reproducibility of the mounting of maxillary casts in the articulator with the use of an arbitrary face-bow (FB) compared to the mounting of casts with regard to the Bonwill-triangle (BT) in a simulator study.

Methods: 38 undergraduate students participated in a study based on a crossover design. Each participant mounted two casts: One was mounted using an arbitrary face-bow (Protar, KaVo, Germany). The second cast was mounted conventionally using an incisal pointer and a rubber-band, marking the occlusal plane of the articulator (Arcus, KaVo, Germany). No participant had prior practical experience with either method. All students used the same Phantom simulator (KaVo, Germany) for arbitrary face-bow transfer. The sequence of methods was chosen at random for each student. The orientation of all 76 models was measured with a 3D-Digitizer (Gamma, Austria) using three predetermined sites, one between the first incisors and two on right and left second molars. The statistical mean and standard deviation of all sites were computed.

Results: The scatter of all three points from the mean showed significant smaller values for themountings based on the arbitrary face-bow (Incisors: 1,700 mm (FB) vs. 2,759 mm (BT), p=0,0027; right molar 1,353 mm (FB) vs. 1,988 mm (BT), p=0,019; left molar 1,622 mm (FB) vs. 2,800 mm (BT), p=0,0098; Student t-Test).

Conclusion: Mounting a cast using an arbitrary face-bow will result in a higher reproducibility than mounting the cast based on the Bonwill-Triangle and the Balkwill-Angle alone.

Seq #114 - Mastication, Jaw Movement, Occlusal Record Methodologies
3:45PM-5:00PM, Thursday, 7 March 2002 San Diego Convention Center Exhibit Hall C