The Art of the Human Observation

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Purpose:

The Art existed before Science and science existed before Technology. Through the centuries and after thousands of years the human race managed to give the well-known ‘’artificial intelligence’’ to automatic machines. Their ‘’soul’’ was named software and today algorithmic high-level equations take place in a hard race of knowledge trying to find the best solutions in the field of designing, analyzing and constructing an orthodontic mechanism. Is it enough? Can we predict the best accuracy using only soft wares? Is there any purpose in the human observation and syllogism anymore? This procedure is an instance of a form of reasoning in which a conclusion is drawn.

Materials and methods:

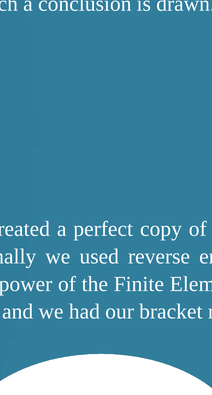
Drawing by hand and using traditional methods of modeling and casting we created a perfect copy of a new convertible ligating bracket in an enlarging scale. We observed the conflicts of the functionality of the assembly. We imagined better options and solutions. Finally we used reverse engineering soft wares (Rapid form of 3ds Systems) and other complicate soft wares of mechanical designing (Dassault Systèmes SOLIDWORKS Corp.) and with the power of the Finite Element Analysis procedure we applied our first observations and figurations and improved our mechanical drawings .After all we simulated our design in the appropriate scale and we had our bracket ready to be constructed.

HAND MADE WAXING MODEL

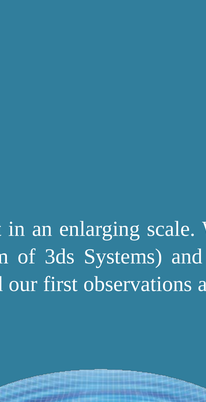
SCANING THE WAXING MODEL

REVERSE ENGINEERING BY 3D SYSTEMS

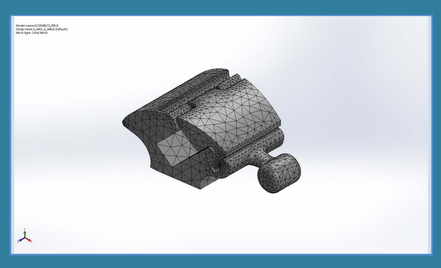
(REAL VIEW GRAFICS OF 3D DESIGNING)
1st DRAWING AND 1st STEP OF OBSERVATION
CONFLICT ON THE UPER CLASP



(REAL VIEW GRAFICS OF 3D DESIGNING)
2nd DRAWING AND 2st STEP OF OBSERVATION
CONFLICT ON THE LOWER CLASP



(REAL VIEW GRAFICS OF 3D DESIGNING)
3rd DRAWING AND 3rd STEP OF OBSERVATION
REDUDANT UPPER BRAKE
AND UNLOCKING HOOK

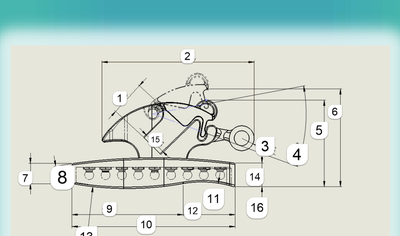


(MESH VIEW OF MECHANISM)
4th STEP MOTION ANALYSIS

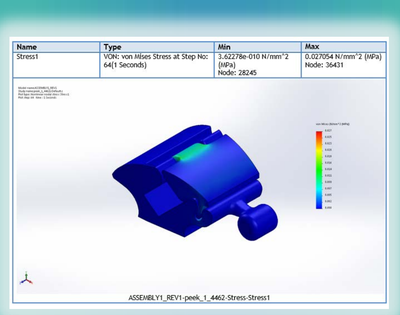
(REAL VIEW GRAFICS OF 3D DESIGNING)
FINAL MODEL –WITH RECTANGULAR SLOT

(REAL VIEW GRAFICS OF 3D DESIGNING)
MODEL CONFIGURATION – WITH CURVED SLOT

WAXING MODEL



MECHANICAL DRAWING



MECHANICAL -MOTION ANALYSIS

PRINTING THE MODEL
RECTANGULAR SLOT
OBSERVATION ON 3 STEPS

PRINTING THE MODEL
CURVED SLOT
OBSERVATION ON 3 STEPS

Results and Conclusions :

With the help of powerful software, based on algorithmic developments and mathematical equations, we are now able to approach with extreme precision, the course of restorations and orthodontic treatments. We can make a forecast and analysis, given always a real context of tolerances and mathematical errors. This software is nothing more than the means and tools giving us the opportunity to “facilitate” the handling of an incident, but not consolidate predefined solutions. We must never lose sight of the fact that nature is a mechanism of thousands and millions of years of memories, through which ended up in today's determinism and function.

With great rigor and consistency, humble excess and consistent methodology, we tailor these technological means, as upgrade tools for our knowledge and the positive interaction the Medical therapeutic purpose without underestimating the power of human bio-operation. And as Aristotle said:

Nature makes no leaps.

(Aristotle, 384-322 BC)

Therefore, why would we?

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