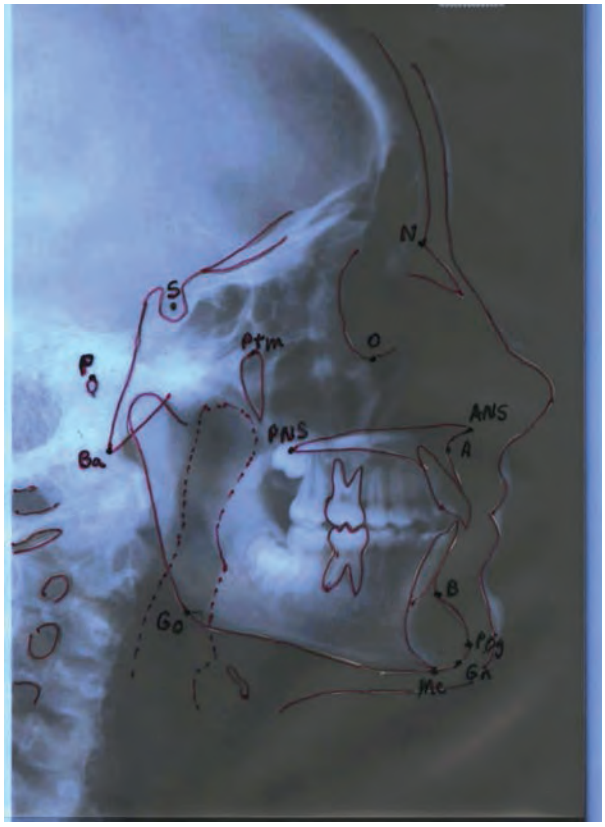
Vertical Lines:	
N-B	Vertical line from N to B. This line relates the mandible to the cranium.
AO to BO (WITS)	Vertical lines drawn from A and B that are 90°to the OP. This evaluates the skeletal relationship of the mandible to the maxilla.
Line +1 (Mx1) — central incisor	From the tip of the upper incisal edge to the tip of the apex.
Line –1 (Md1) — central incisor	From the tip of the lower incisal edge to the tip of the apex.
Upper facial height to lower facial height:	
Na-ANS	Upper facial height. Adult = 45% to 50%; child = 50% to 50%.
ANS-Me	Lower facial height. Adult = 50% to 55%; child = 50% to 50%.
Y-axis	Draw a line from S to Gn. Measure the angle of SN to S-Gn. This angle gives the position of the mandible in space. Normal is about 64.
A-Pog line	Vertical line that relates the incisor teeth to the jaws. Ideally, the –1(Md1) should be at +1 to +2 mm. Can be more (for example +3 or +4) in the case of skeletal CLII discrepancies.
SNV	Sub-Nasal Vertical perpendicular – Vertical line at 90° from an absolute horizontal line at the junction of the lip/nose angle. Is used to judge the esthetics of the upper and lower lips. Aids in deciding if teeth can be protruded, should stay where they are, be retracted and/or if extractions are needed. If the lips are too far in front and incompetent, then there may be too much dental and or skeletal protrusion. *(See chapter "Esthetic Diagnosis)*

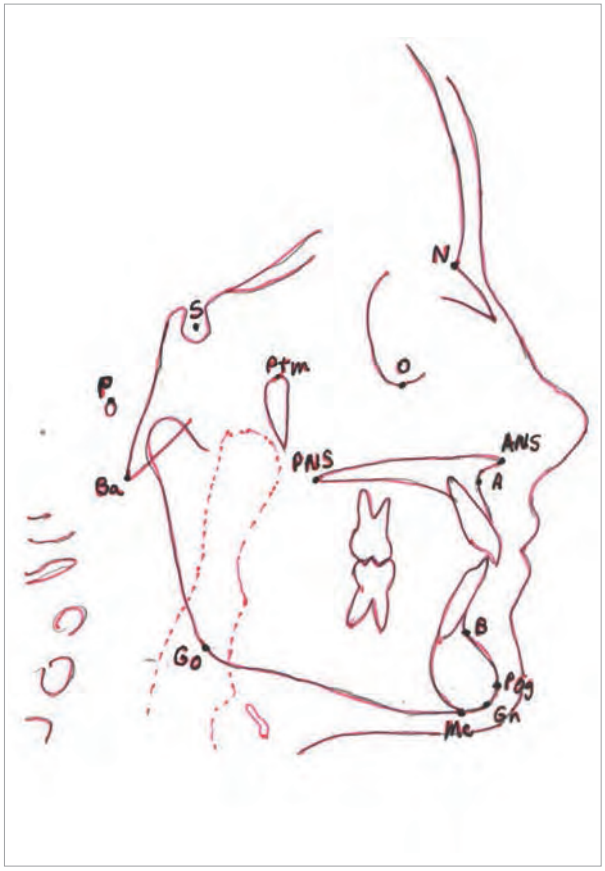
Other Planes and Vertical Lines:	
N to Pog	« Facial plane» Vertical line to give an idea as to the skeletal profile.
SN-Pog	The facial angle: how the chin relates to the face.
Ba-Na	Line from Ba to Na.

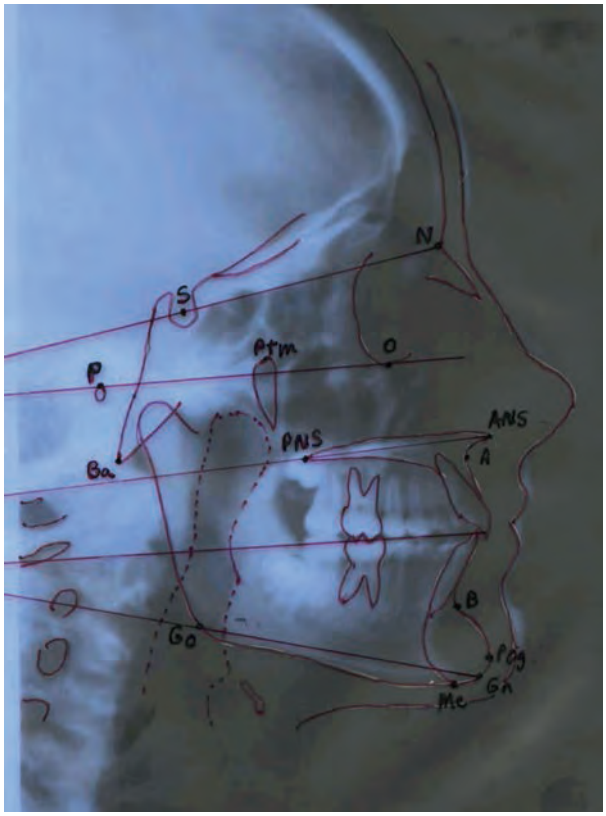
Steiner "norms":	
	Ideal
SNA	82°
SNB	80°
ANB	2°
+1 (Mx1) to NA	22°
-1 (Md1) to NB	25°
+1 (Mx1) to NA in mm	4 mm
-1 (Md1) to NB in mm	4 mm
+1 (Mx1) to – 1	131°
-1 (Md1) to A-Pog line	Vertical line that relates the incisors to the mandibular base. –1 (Md1) should be at +1 to +2 mm for most cases. It can be more (+3) in the case of skeletal CLII discrepancies.
NB to Pog in mm	About +2 mm
GoGN to SN	32°
Y axis	64°
WITS analysis (AO to BO in mm)	Vertical lines (AO & BO) drawn from A and B that are precisely 90°to the OP. This evaluates the skeletal relationship of the mandible to the maxilla. Measure the difference from AO to BO. Normal skeletal CLI is 0. If the AO is anterior to BO this indicates a skeletal CLII and is given a "plus number". If BO is anterior to AO this is given a "minus number" and indicates a skeletal CLIII. The Wits indicates the skeletal base A-P discrepancy in mm and thus how much A-P (horizontal) orthopedic correction would be necessary to arrive at Wits 0. This is a very important part of the diagnosis: if the AO, BO lines and the OP are not precisely drawn, then the Wits analysis will be incorrect, resulting in an incorrect diagnosis and treatment plan.

CEPHALOMETRIC TRACING AND ANALYSIS

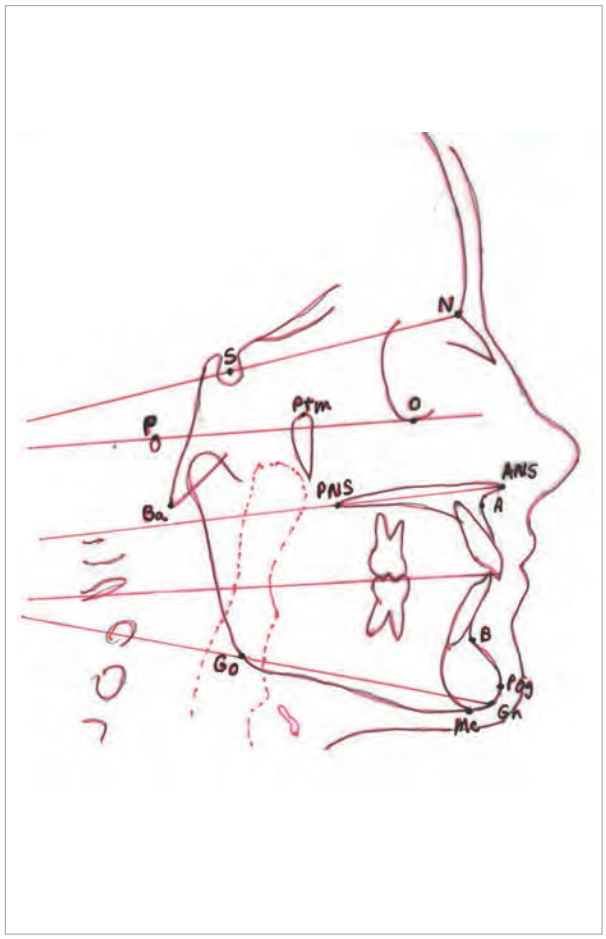


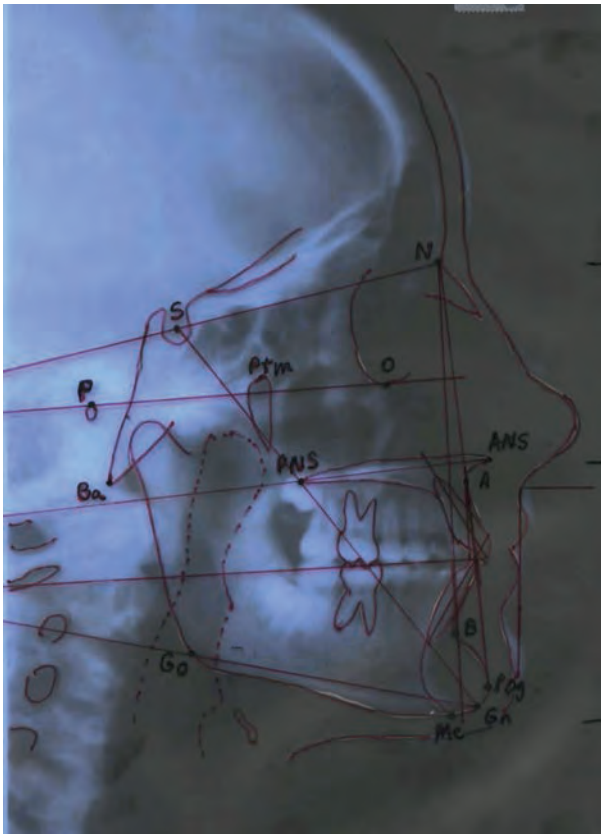
Points



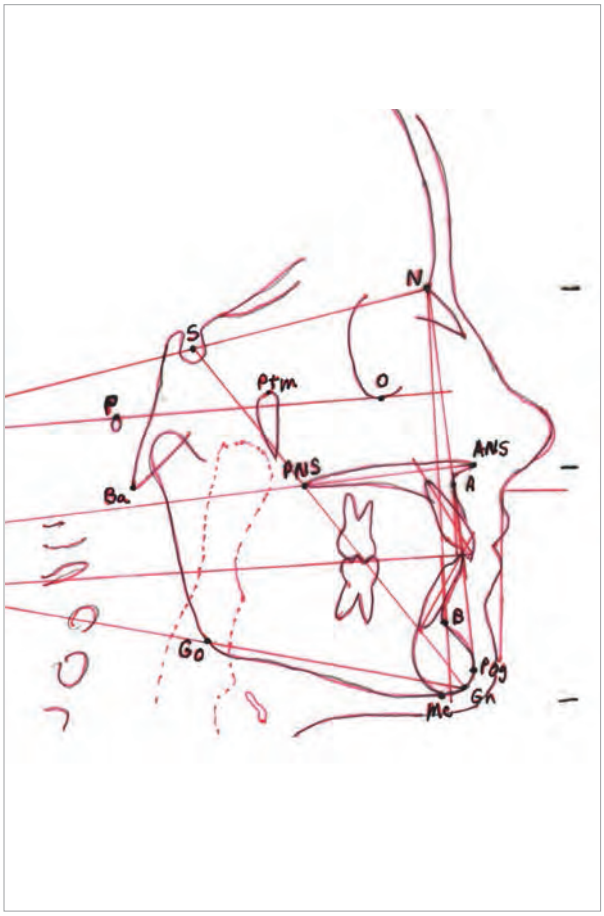


Horizontal Planes

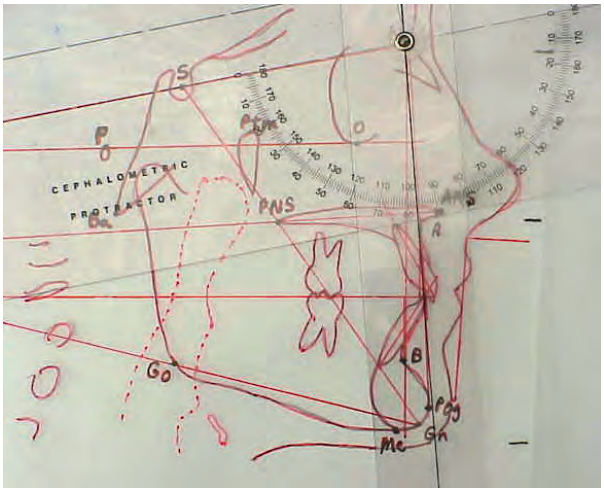




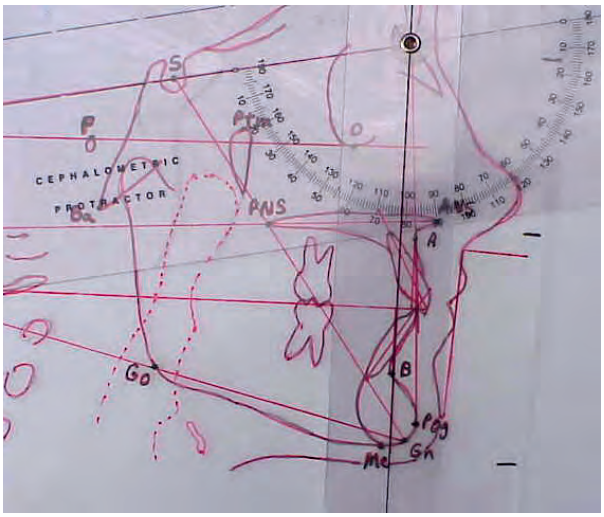
Vertical lines



SNA



SNB



Go-Gn to SN: MPA