

A revised form for graphing dentofacial pattern from headfilm data¹

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Since Vorhies and Adams¹ developed a graphic means of presenting the method of Downs², orthodontists have had at their disposal a device which greatly enhances the usefulness of this kind of patient appraisal, not only in private practice, but also in teaching institutions. While it is true that regular use of the Downs Analysis soon accustoms one to finding significance in each of the mean, minimal and maximal values, many who have an understanding of the procedure find that they have to think twice as to the significance of certain values derived from a tracing of a particular individual. This difficulty becomes even more pronounced when the implications of the tracing are to be explained to a person unfamiliar with the numerical standards involved, and of course the best example of an uninitiated person is the parent who professes an interest in an x-ray procedure encountered for the first time.

By setting the mean values associated with the Downs Analysis one below another, and by flanking each mean value with the respective minimal and maximal values in such a way that all of the extremes associated with a retrognathic profile lie on the left and all those with prognathic profile on the right, Vorhies and Adams made understanding possible with a minimum of explanation.

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The author was fortunate enough to receive a substantial quantity of the blank forms as designed by Vorhies and Adams several months prior to the publication of their article. He was sufficiently impressed with its value that the supply was soon exhausted and some means had to be found to replenish the supply without imposing upon the generosity of others. Since this meant the preparation of an original drawing from which an electrotpe might be made, the possibility of making changes in the original design logically came to mind. It seemed possible to eliminate a few minor inconveniences inherent in the graph as originally designed by Vorhies and Adams, which derived from the fact that in their design they started with a conventional piece of graph paper. All of the mean values were arrayed on a vertical line of the graph paper, and more often than not the mean values were not whole numbers. As a result of this, every vertical line to the right or left of the mean had imposed upon it a value which ended with the same decimal as the mean. Thus it was difficult to find whole numbers or half numbers on the scale. Since most of the values derived from tracings are in whole numbers, or occasionally halves, the task of plotting an individual reading from a headfilm was made needlessly difficult, and the point so plotted seldom coincided with an engraved line on the graph paper. Because the mean value determines the value of each of the calibrations to the right or to the

left, the maximal or minimal value bounding the polygon usually falls at some point other than on a ruled line of graph paper.

These objections can be readily disposed of if one abandons the use of graph paper as a basis for the chart. This may readily be done because in reality only 10 of the horizontal lines, evenly spaced along the length of the paper are actually used, and the rest might as well be blank.

In redesigning the chart (Fig. 1) for our own use, we simply used short lengths of lines for each of the 10 values and slipped them to the right or to the left so that the mean values still remained one above the other, but each calibration on the chart stood for a whole number. Every 5th line is heavier than the others, corresponding with numerical values evenly divided by 5. No further identification of the calibrations is necessary, since one or the other of the range values (or the mean) will suffice for this purpose.

A stub arrow points to the location on the scale of the mean value for the

particular angular reading being charted, with the numerical value of the mean indicated above the arrow. The curved arrows at the boundaries of the polygon indicate the extreme values specified by Downs; those on the left correspond with the minimal or maximal associated with a retrognathic profile, while those on the right correspond with a prognathic profile.

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These charts are available at the Van Rooy Printing Co., Memorial Drive, Appleton, Wisconsin. Prices depend upon quantity ordered, and additional printed matter to appear in addition to the polygon.

REFERENCES

1. Vorhies, J. M. and Adams, J. W. Polygonic interpretation of cephalometric findings. *Angle Orthodontist* 21:194, Oct. 1951.
2. Downs, W. B. Variations in facial relationships: their significance in treatment and prognosis. *Am. Jnl. Orth.* 34:812, Oct. 1948.