



Vertical exaggeration is simply the ratio of the vertical scale to the horizontal scale in a stereoscopic model. It is constant throughout the whole model.

Thurrell [1953] has identified the sources of this exaggeration. They can be broken down to two main causes:

- a) Stereoscopic causes of vertical exaggeration
 - i) Viewing distance. From stereoscopy we know that increasing the viewing distance results in a decrease in the horizontal scale. Yet, the vertical scale remains practically the same thereby increasing the vertical exaggeration.
 - ii) Separation of the photographs. The separation is a constant for each individual. It might be possible to increase the separation and still maintain stereoscopy but this will cause eyestrain.
 - iii) Eye base. Since each individual's eye base is a constant, no change in scale will be found. But, individuals with a narrower eye base will have a greater amount of vertical exaggeration.
 - iv) Magnification. If the model is viewed under magnification, the vertical exaggeration will correspondingly vary.

- b) Photographic causes of vertical exaggeration
 - i) Photographic scale. The exaggeration will vary with scale when the flying height changes but a change in the focal length at a given altitude will not cause a change in the vertical exaggeration.
 - ii) Altitude above the terrain. As we see in scale, vertical exaggeration is affected by flying height. The exaggeration is inversely proportional to the change in flying height if all other factors remain constant.
 - iii) Air base. Again, all other factors being constant, an increase in the air base will cause a corresponding increase in the vertical exaggeration. But, the air base does have limitations if we want to view the area under stereo.
 - iv) Terrain relief. There is a slight increase in the vertical exaggeration with increased elevation.

REFERENCES

Thurrell, R., 1953. "Vertical Exaggeration in Stereoscopic Models", Photogrammetric Engineering, XIX (4): 579-588, September.