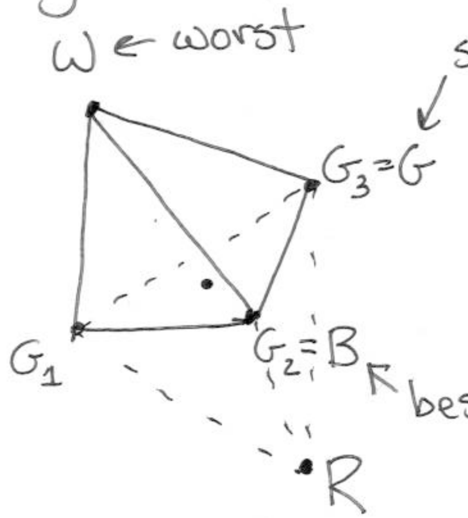
Adapting Nelder-Mead to n dims.

We have now seen how to implement Nelder-Mead on the plane.

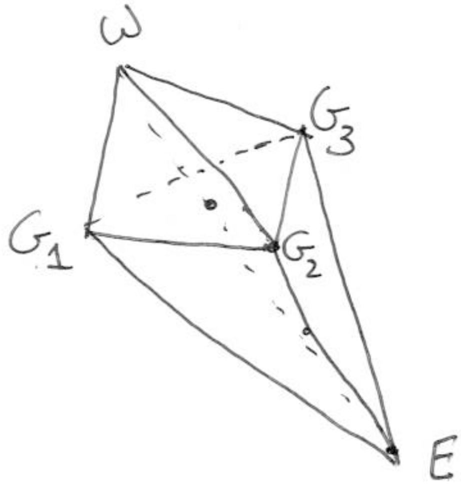
In general, we have



$$M = \frac{1}{3}(G_1 + G_2 + G_3)$$

$$R = W + 2(M - W).$$

If we find $f(R) < f(W)$, we will take it, replacing W with R. If $f(R) < f(B)$, we try to continue to E.

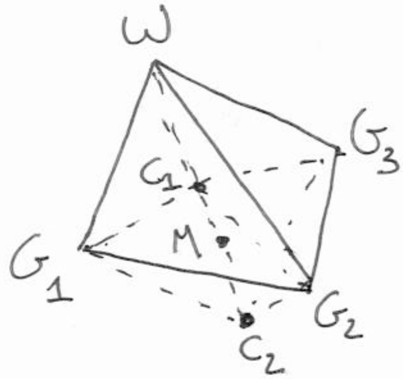


If it doesn't improve things further, we stick with R (and stop), otherwise we take E (and stop).

We know now that $f(R) > f(B)$.

If $f(R) > f(G)$, then we didn't even beat the second-worst point.

Try a contraction



$$C_1 = \frac{1}{2}(M + W)$$
$$C_2 = \frac{1}{2}(M + R)$$

If $f(C) > f(W)$, then ~~attempt~~ give up and shrink around B.

This is even simpler than the variant we gave for 2 dimensions.

As it turns out, this is built into Mathematica, making demos easy!