

Random Method

There is actually a very interesting story behind our random number algorithms. There we were in Madison, Wisconsin on a business trip. We had hauled our computers 250 miles so that we could work on CraftGen after hours. We started talking about how to best generate random numbers. I had an idea (the Abraham method) and Jim had an idea (the Siegienski method). The Abraham method is variation based on percentage of the seed value limited by proximity. The more exotic Siegienski method uses complex formulas and algorithms to deduce a number also based on percentage of the seed value. We couldn't decide which method to use, so we included both. What the heck. And as long as we were going to include two ways of generating random numbers, we thought we might as well include a third. The third is a boring method that just pops a number magically out of thin air. And if that isn't going too far, we also allow you to randomly choose which random method to use.

I guess the story wasn't that interesting. But if you haven't had enough, I'll explain the differences between the methods.

Ranged Variance (a.k.a. the Abraham method)

his method of random number generation will produce a number based on the default, but varying in equal quantities on either side. In the example above Y represents the minimum, Z the maximum, and X the default value for a given number type. The difference between X and Y is stored in M and the difference between Z and X is stored in N. The values in M and N are compared and the least of these two values is placed in R. R represents the greatest variation from the default in either direction. This number is then modified by the 'Variation Percentage'. For example, if the 'Variation Percentage' is set to 10%, the variance would be X plus or minus $R(.10)$.

Weighted Variance (a.k.a. the Siegienski method)

his method of random number generation also produces a number based on the default. This method differs greatly from the Ranged Variance method. In the example above N represents the default value, which is stored in a. The difference between the Max value and N is stored in b. The 'Variation Percentage' is applied to the values a and b resulting in X1 and X2 respectively. The value r is the result of $N - X1$ while s is the result of $X2 - N$. The difference between X2 and X1 (or $r + s$) is the full range of variation.

For example:

'Variation Percentage' = 10%

The range of variation on a scale of 0-100 with the default being 10 is between 9 and 19.

Raw Variance

The Raw Variance method uses the full range of the item in question to determine its random value. So if the item is 'Land Mass' with a range from 0-100, the Raw Variance method would randomly pick a number from 0-100 without any limitations.

This method is very unpredictable, and could create difficult maps that are near unplayable. Think of it as a challenge.