Subject: adapting existing Victory Point scales for other forms of IMP scoring (such as Cross-IMPs or Butler).

1. Introduction

The expression 'R' below refers to the number of results on a board.

The basic assumption that VP scales are directly proportional to the square root of number of boards in the match is totally inherent within; indeed, the whole concept of factoring the number of boards for X-IMP or Butler scoring compared to the normal teams-of-four VP scale of equivalent length is absolutely reliant upon this assumption.

<For example, a 16-board scale is twice the size of a 4-board scale (sqrt of 16/4), not four times the size.>

Please also refer to point 4 below if one prefers to think in terms of actual IMP equivalents from the outset rather than 'number of boards in the match' equivalents.

2. X-IMP pairs (assuming the sum of all cross-imps are being divided by the number of comparisons)

Solution: multiply the number of boards in a normal teams-of-four scale by:-

R/[2 x (R-1)].

So, in a large field wherein 'R' and 'R-1' are nearly identical, multiply the number of boards by 1/2 i.e use the scale for one-half of the actual number of boards - BUT MORE THAN one-half in a small tournament e.g. no modification at all for only two tables (use the normal teams-of-four scale, as - by definition - this is the exact equivalent of a normal teams-of-four match).

<Private note: dividing the sum of all cross-imps by the number of results (one greater than the number of comparisons) simplifies things considerably in many regards - but it's not at all what the players would expect to see (it's effect is similar to Ascherman match-pointing of pairs events). The above formula would of course need to be modified accordingly were this approach to be adopted, and in either case, dividing the sum total of cross-imps by anything will create fractional IMPs, so some rule would be required before these can be converted to VPs.>

3. Butler IMPs (almost regardless of how many results, if any, are being dropped from the datum; as long as it's vaguely sensible)

Solution: multiply the number of boards in a normal teams-of-four scale by:-

(R-1)/(R x sqrt2).

So, in a large field wherein 'R' and 'R-1' are nearly identical, multiply the number of boards by 1/sqrt2 i.e. use the scale for about 70% of the actual number of boards - BUT LESS THAN 70% in a small tournament e.g. only 35% of the number of boards for a two table tournament.

Note: the sqrt2 factor in the above is an approximation (albeit a rather good one) of the general non-linear effect of the current Aggregate to IMP scale. If the IMP scale was truly linear, then the sqrt2 factor would instead be re-written as simply being '2', in which case in a 2-table tournament the 35% factor would become only 25% (and the approximate 70% factor for a large tournament would become 50%).

4. Notes - pure IMP equivalents (from where the formulae above are derived)

The above are the factors needed to REDUCE the number of BOARDS on the corresponding teams-of-four scale. If one prefers to think in terms of pure IMPs, then one needs to take the Square Root of the above formulae.

For example, in a large field X-IMPs for any given pair will be only approximately 70% (1/sqrt2) of what they might be for a given team-of-four, whilst Butler-IMPs will be about 85% of the equivalent value (this higher number being entirely due to the non-linear effect of the aggregate to IMP scale).

With only two tables the respective figures will be 100% and about 60% (and the latter would be precisely 50% were it not for the non-linear effect of the aggregate to IMP scale; and would be approximately 70% in a large tournament).

It's perhaps curious, and even counter-intuitive, to note that whilst X-IMPs per comparison compared to teams-of-four IMP equivalents move from around 100% to 70% as the 'field' (number of results) gets larger, Butler-IMPs move in the completely opposite direction - from around 60% to 85% of the teams-of-four equivalents.

But a moment of quiet contemplation might discover why this is true. For example, consider trying to win (say) 10 IMPs in a 2-table X-IMP tournament (quite easy to do, just as in a normal teams-of-four game) and then trying to win it in a 2-table Butler (virtually impossible due to one's own score being included in the 'datum'). Then consider winning 10 IMPs per comparison in a very large X-IMP tournament (no longer quite so easy to win 10 IMPs compared to every other single result in a very large field) and consider winning it in a large Butler (no longer quite so impossible as the datum becomes more 'normal' as the field size increases).

Of curiosity value only, the two formulae above are close to identical for precisely 6 results (tables) at which point we should be using the VP scale for about 60% of the number of boards of the normal teams-of-four scale in either case: or, put another way, the pairs' scores will be just over 3/4 of the expected teams' score in either case (sqrt 60% = 77%).

MUCH MORE IMPORTANTY: VP Scales are 3-dimensional, NOT 2-dimensional. The current teams-of-four scales work well because the 3rd dimension has already been fixed at "Number of Results = 2". Any modifications for other methods of scoring need to also take account of the size of the field, but this can be accommodated as outlined above.

5. Cross-IMPed teams-of-eight (a very English thing!)

Two of the four comparisons are directly related, whilst two are not. Therefore the combined IMP scores will be 2 x sqrt2 = sqrt8 larger than usual. So multiply the number of boards in the match by 8 and use the corresponding VP scale. Alternatively one could always cross-VP it instead.

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