CONSEQUENTIAL SURPLUS: TRANSFER OF THE LAST PARCEL

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In an election by the Single Transferable Vote it is standard practice:
1) in transferring a parcel of voting papers from an excluded or elected candidate, to pass over any preferences not only for other excluded candidates but also for other elected candidates;
2) in transferring a consequential surplus (i.e. a surplus which has arisen either from the exclusion of a candidate, or from the surplus of another elected candidate), to transfer only the last parcel of papers received, necessarily all of one value, which gave rise to the surplus.

These two rules are complementary.

Suppose in an election with quota 14, candidate A has 20 papers marked ABCD. candidate B has 14 papers, and C has 10 papers. There are other candidates, and other papers, none showing preferences for A, B, C.

Candidate A is elected with a surplus; candidate B is elected with the quota. When the primary surplus of A is transferred. the second preferences for B are passed over, and all 20 voting papers go to the next preference C, each paper at a transfer value determined by sharing the surplus between the transferable papers, 6/20 = 0.3.
The state of the count is now:

A	20	-6	14
B	14		14
C	10	+6	16

The surplus of C has arisen because the surplus of A was passed directly to C, passing over B. In transferring the surplus of C it would thus clearly be wrong to examine any of the 10 original papers of C, while the larger number of 14 papers for B remain unexamined and have no further effect on the count.

Hence the surplus of C is shared between the papers received from A, and these go to the next preference D, each at a transfer value of 2/20 = 0.1.

Thus, so long as we pass over preferences for already elected candidates, only the last parcel is examined. The transfer of a consequential surplus is seen as the completion of the transfer of an earlier surplus, or the completion of an earlier exclusion.

However, suppose the rule were changed, and we transferred papers to the next preference even though already elected. In the example the surplus of A now goes to B:

A	20	-6	14
B	14	+6	20
C	10		10

In transferring the surplus of B it is now legitimate to examine the 14 original papers as well as the 20 @ 0.3 just received.

Suppose 5 of the 14 papers show no further preference. The total value of the transferable papers is then 9+6 = 15. Since the surplus is 6, the transfer factor is 6/15 = 0.4. The transfer value of each of the 9 transferable original papers is 0.4. and the transfer value of each of the 20 papers received from A is 0.4 x 0.3 = 0.12. The value now transferred from B is:

9 @ 0.4	= 3.6
20 @ 0.12	= 2.4
Total	6.0

Such calculations would not be acceptable in the practical situation of an actual election count when papers of several different values might be involved.

But there is a more serious problem. Some of the original papers for B might show a next preference for A, leading to a new surplus for A. The transfer of this surplus would require that a further fraction of the 20 original papers of A should now go to B, generating a further surplus for B, part of which goes to A. and so on.

Clearly the resulting iterative process could only be implemented on a computer.

Hence in a manual count, we must continue to pass over preferences for elected candidates, and therefore it follows that in transferring a consequential surplus, only the last parcel of papers should be examined.