「 $b_i \le c_i \le b_{i-1}$ for all i.

$$b' = b_1 - 1, \cdots b_{i-1} - 1, b_i, \cdots$$
$$c' = c_1 - 1, \cdots, c_{i-1} - 1, c_i, \cdots, \cdots$$

Obviously, it is true. 」

" Comment on $c' = c_1 - 1, \cdots c_{i-1} - 1, c_i, \cdots$

If $\ell(c) = k$, and $i \le k$, since $c_k \ne 0$, $\ell(c') = k$.
Thus $\delta(a, b' : c') = \#(\sigma_a \cdot \sigma_b \cdot \sigma_{c_1 - 1 - c_k', c_1 - 1 - c_{k-1}', \cdots c_1 - 1 - c_2})$ with $c_1 - 1 - c_k' = c_1' - c_k'$, $c_1 - 1 - c_{k-1}' = c_1' - c_{k-1}'$
$= \#(\sigma_a \cdot \sigma_{b'} \cdot \sigma_{c_1 - c_k - 1, \cdots c_1 - c_i - 1, c_1 - c_{i-1}, \cdots})$

since $c_j' = c_j - 1$ if $j \le i-1$
$c_j' = c_j$ if $j \ge i$ "

Thus we may assume from the start that $c_i \ge b_{i-1}$ for all i.

「 $\delta(a, b; c) = \delta(a, b'; c')$
$b' = b_1 - 1, \cdots b_{i-1} - 1, b_i \cdots$
$c' = c_1 - 1, \cdots c_{i-1} - 1, c_i \cdots$

For some i, if $b_{i-1} > c_i$, then $b_{i-1}' > c_i'$ and $b_{i-1}' - c_i' = b_{i-1} - c_i - 1 \ge 0$. $\Rightarrow$ The difference decreases. $\Rightarrow$ We may assume that $c_i \ge b_{i-1}$ for all i by continuing the process, until we get $b_{i-1}' - c_i' \le 0$. 」