adjacent ensemble of $B$ if there exists a vertex $\hat{v} \in V$, $(v, \hat{v}) \in E$, with $\hat{B} \in \mathcal{B}_{\hat{v}}$.
Now, let $\mathcal{B} \in \mathbb{B}$ be an ensemble assignment, and let $m = (v, u, z, s) \in M(\mathcal{B})$ be an elementary move on $\mathcal{B}$. Let $B_u$ be the source and $B_z$ the target ensemble of the move $m$. If $z = |\mathcal{B}_v| + 1$, assume $B_z := \emptyset$. Set $\mathcal{B}' := m(\mathcal{B})$. Let $B'_u$ be the source and $B'_z$ the target ensemble after the move $m$ has been made. Be aware that $B'_u = \emptyset$ is possible.

1. To define $b_1(m)$ and $d(m)$, we first need the following settings:

$$b_u(m) := \begin{cases} \Big(\max\big\{\, |B_u \cap B| \;\big|\; B \text{ is an adjacent ensemble of } B_u \big\}\Big)^2, & \text{if } u \neq 0; \\ 0, & \text{otherwise.} \end{cases}$$

$$b_z(m) := \begin{cases} \Big(\max\big\{\, |B_z \cap B| \;\big|\; B \text{ is an adjacent ensemble of } B_z \big\}\Big)^2, & \text{if } z \neq 0; \\ 0, & \text{otherwise.} \end{cases}$$

Define $b'_u(m)$ and $b'_z(m)$ in the same way as $b_u(m)$ and $b_z(m)$, except that $B'_u$ and $B'_z$ are used instead of $B_u$ and $B_z$.

Now define $b_1(m)$ and $d(m)$ as follows:

$$b_1(m) := \big(b'_z(m) - b_z(m)\big).$$

$$d(m) := \big(b'_u(m) - b_u(m)\big) + \big(b'_z(m) - b_z(m)\big).$$

Interpretation: The value $b'_u(m) - b_u(m)$ expresses the change (caused by the elementary move $m$) in the highest number of equal services, the source ensemble has to its adjacent ensembles. In the definition of $b_u(m)$ and $b'_u(m)$ we have raised the values to the square so to stress changes on higher level of number of equal services. The same holds for $b'_z(m) - b_z(m)$. The value $d(m)$ combines these two values. Note that $d(m) > 0$ implies $b_1(m) > 0$, because we always have $b'_u(m) - b_u(m) \leq 0$.

2. Define $b_2(m)$ to be:

$$b_2(m) := \begin{cases} b_u(m), & \text{if } u \neq 0 \text{ and } b_u(m) = b'_u(m); \\ 0, & \text{otherwise.} \end{cases}$$

Interpretation: The value $b_2(m)$ corresponds to the value $b_u(m)$, that is, to the highest number of equal services, the source ensemble $B_u$ has to its adjacent ensembles, if and only if the move $m$ removes a service from the ensemble $B_u$ without this changing the value $b_u(m)$. In this way we free bandwidth for an eventual further development of the ensemble $B_u$.