Let the universe of potential social status be an M-dimensional space, $\mathcal{S}$. Each dimension, indexed by $k \in \{1, 2, \ldots, M\}$, represents a distinct field of social value (e.g., wealth, artistic skill, community service).

An individual, indexed by $i \in \{1, 2, \ldots, N\}$, is defined by their profile across this space. This profile has two key components: their objective rank and their subjective attention.

For each dimension $k$, an individual $i$ has a **relative rank**, $r_{ik} \in \mathbb{R}$.

$$r_{ik} \in [-1, 1] \tag{1}$$

where $r_{ik} = 1$ represents the top-ranked individual and $r_{ik} = -1$ represents the bottom-ranked.

Each individual $i$ also possesses an **attention vector**, $\mathbf{w}_i$. This vector represents an individual's value system and how they allocate their finite cognitive resources.

$$\mathbf{w}_i = (w_{i1}, w_{i2}, \ldots, w_{iM}) \tag{2}$$

where $w_{ik}$ is the share of attention individual $i$ allocates to dimension $k$. The vector is constrained such that:

$$w_{ik} \geq 0 \quad \forall k, \quad \text{and} \quad \sum_{k=1}^{M} w_{ik}^2 = 1 \tag{3}$$

This vector is endogenous and can be influenced by external forces. The norm vector is the average of all individual vectors for each dimension and lives in the same feasible set.

Deviating from dominant social norms is cognitively and socially costly. We model this as a **cognitive stress function**, $\mathcal{C}(\mathbf{w}_i)$, which measures the distance between the attention vector of the individual and the norm, $\bar{\mathbf{W}}$.

$$\mathcal{C}(\mathbf{w}_i) = \lambda \cdot \sum (\mathbf{w}_{ik} - \bar{\mathbf{w}}_k)^2 \tag{4}$$

$\lambda$ is the parameter representing societal pressure to conform.

The total utility for individual $i$ is the attention-weighted sum of their rank-derived utilities, penalized by the cognitive stress of their attentional choices.

$$U_i(\mathbf{w}_i) = \frac{1}{\sqrt{M}} \left[ \sum_{k=1}^{M} w_{ik} \cdot r_{ik} \right] - \mathcal{C}(\mathbf{w}_i) \tag{5}$$

Under the assumption of rationality, an individual will choose their attention vector $\mathbf{w}_i$ to maximize this utility function:

$$\mathbf{w}_i^* = \arg\max_{\mathbf{w}_i} U_i(\mathbf{w}_i) \tag{6}$$

Social welfare is the aggregate utility maximized under the current social structure.

$$W_{\text{Social}} = \sum_{i=1}^{N} \max_{\mathbf{w}_i} U_i(\mathbf{w}_i) = \sum_{i=1}^{N} U_i(\mathbf{w}_i^*) \tag{7}$$