Rationalizable Strategies - Pearce

Definition

An action $a_i \in A_i$ is rationalizable in the strategic game $\{N, (A_i), (u_i)\}$ if there exists

- a collection $((X_j^t)_{j \in N})_{t=1}^{\infty}$ of sets with $X_j^t \subset A_j$ for all j and t,
- a belief μ_i^1 of player i whose support is a subset of X_{-i}^1, and
- for each $j \in N$, each $t \geq 1$, and each $a_j \in X_j^t$ a belief $\mu_j^{t+1}(a_j)$ of player j whose support is a subset of X_{-j}^{t+1}

such that

- a_i is a best response to the belief μ_i^1 of player i
- $X_i^1 = \emptyset$ and for each $j \in N \backslash \{i\}$ the set X_j^1 is the set of all $a_j' \in A_j$ such that there is some a_{-i} in the support of μ_i^1 for which $a_j = a_j'$
- for every player $j \in N$ and every $t \geq 1$ every action $a_j \in X_j^t$ is a best response to the belief $\mu_j^{t+1}(a_j)$ for player j
- for each $t \geq 2$ and each $j \in N$ the set X_j^t is the set of all $a_j' \in A_j$ such that there is some player $k \in N \backslash \{j\}$, some action $a_k \in X_k^{t-1}$, and some a_{-k} in the support of $\mu_k^t(a_k)$ for which $a_j' = a_j$.