Extensive Games With Perfect Information

Definition

An extensive game with perfect information has

- a set N of players;
- a set H of histories such that
  - the empty sequence $\varnothing$ is a member of H,
  - If $(a^k)_{k=1,\ldots,K} \in H$ where K may be infinite) and $L < K$ then $(a^k)_{k=1,\ldots,L} \in H$, and
  - If an infinite sequence $(a^k)_{k=1}^{\infty}$ satisfies $(a^k)_{k=1,\ldots,L} \in H$ for every integer L then $(a^k)_{k=1}^{\infty} \in H$;

  (Each component of a history is an action taken by a player.) A history $(a^k)_{k=1\ldots,K} \in H$ is terminal if it is infinite or there is no a^{K+1} such that $(a^k)_{k=1\ldots,K+1} \in H$. Z is the set of terminal histories;
- A function P that assigns to each member of $H \backslash Z$ a member of N. (P is a player function, $P(h)$ is the player who takes an action after history h.)
- For each player $i \in N$ a preference relation $\succeq_i$ in Z (the preference relation of player i).