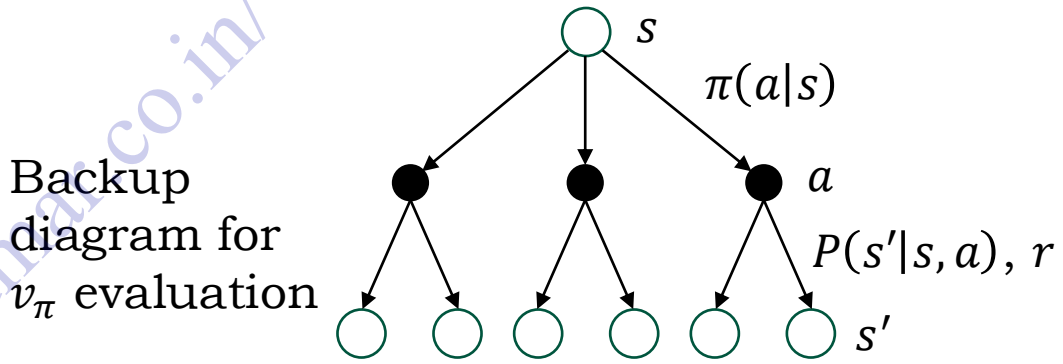
Reinforcement Learning Algorithms: Value Based

Introducing Q – function

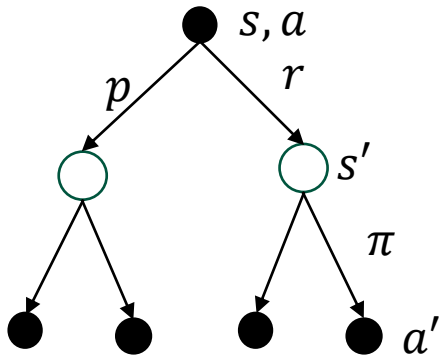
Most of the **Reinforcement Learning** problems have unknown dynamics…
If a model is unavailable, state values alone will not be sufficient to determine a policy.



Backup diagram for v_π evaluation

$$Q^\pi(s,a) \leftarrow \mathbb{E}_\pi[G_t \mid S_t = s, A_t = a]$$

$$Q^\pi(s,a) = \sum_{s'} P(s'|s,a)[r + \gamma V^\pi(s')]$$



Backup diagram for q_π evaluation

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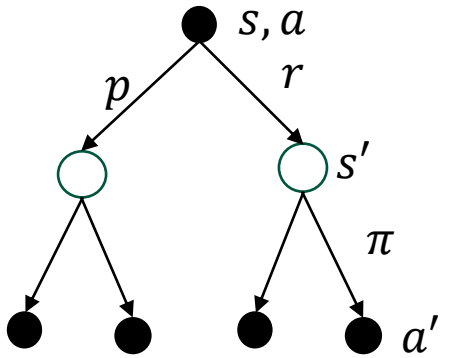
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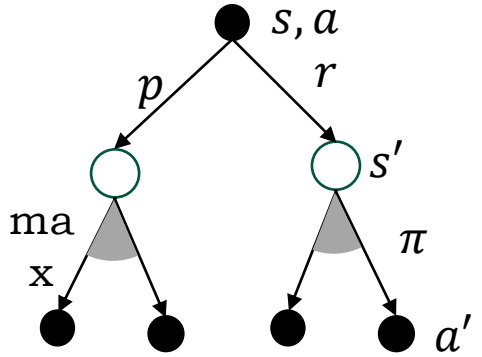
If a model is unavailable, state values alone will not be sufficient to determine a policy.

Backup diagram for Q^{π} evaluation



$$Q^{\pi}(s,a) = \sum_{s'} p(s'|s,a)[r + \gamma V^{\pi}(s')]$$

Backup diagram for Q^{*}evaluation



$$Q^{*}(s,a) = \sum_{s'} p(s'|s,a)\left[r + \gamma \max_{a'} Q^{*}(s',a')\right]$$

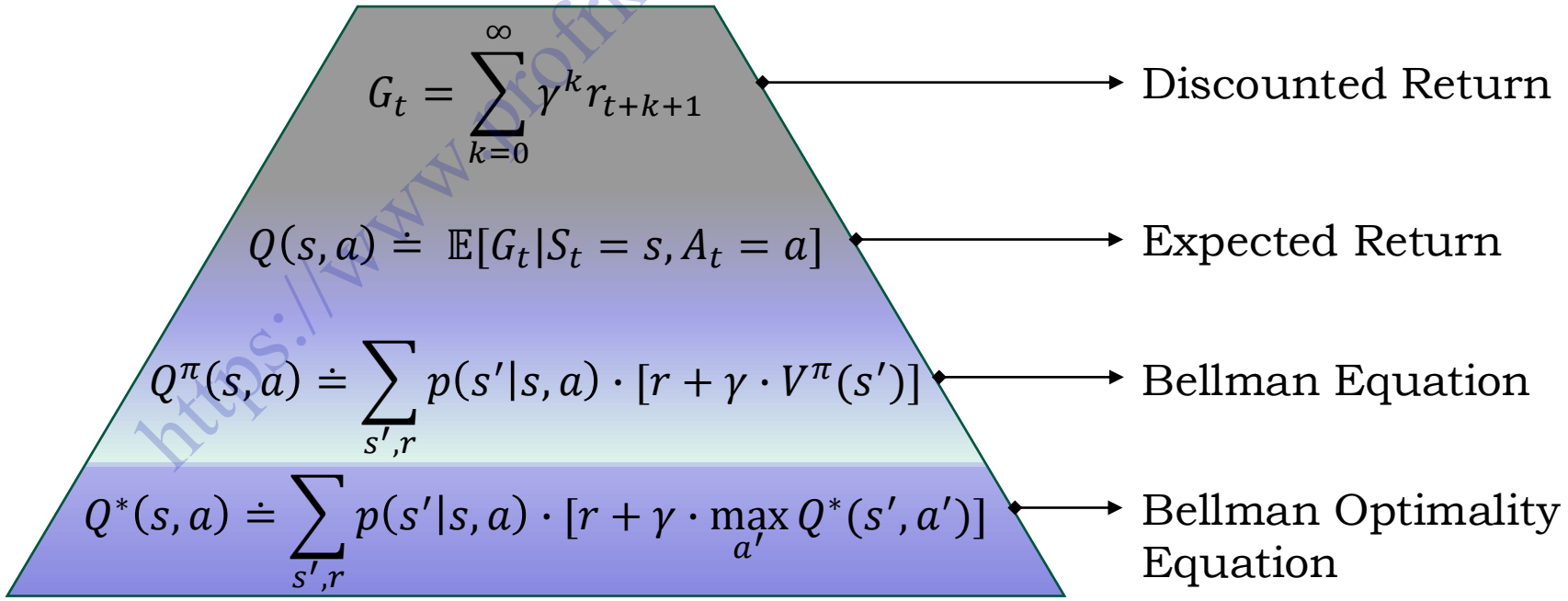
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Reinforcement Learning Algorithms: Value Based

Introducing Q – function

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