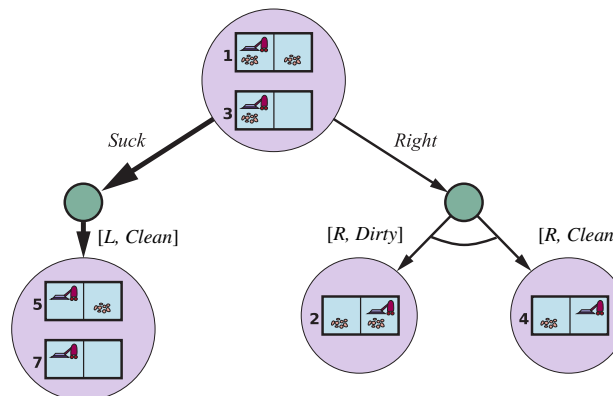


**Figure 4.15** Two examples of transitions in local-sensing vacuum worlds. (a) In the deterministic world, *Right* is applied in the initial belief state, resulting in a new predicted belief state with two possible physical states; for those states, the possible percepts are  $[R, Dirty]$  and  $[R, Clean]$ , leading to two belief states, each of which is a singleton. (b) In the slippery world, *Right* is applied in the initial belief state, giving a new belief state with four physical states; for those states, the possible percepts are  $[R, Dirty]$ ,  $[L, Dirty]$ , and  $[R, Clean]$ , leading to three belief states as shown.



**Figure 4.16** The first level of the AND-OR search tree for a problem in the local-sensing vacuum world; *Suck* is the first action in the solution.