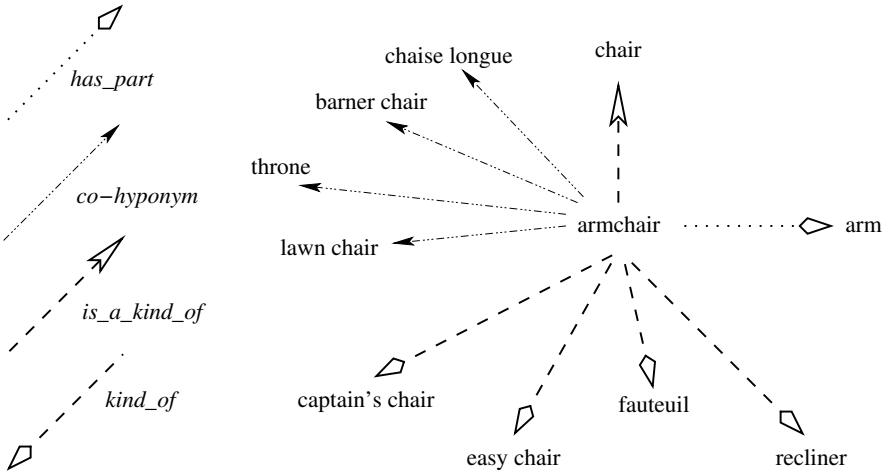
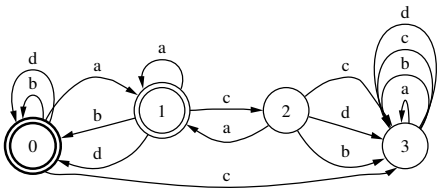
1. ***Cf. cours***

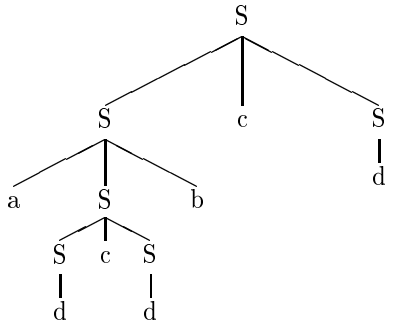
2.



3. (a)



(b) De nombreuses possibilités. Par exemple (sans ε) $A \to AS \mid A \mid aC$
$A \to a \mid b \mid d$
$C \to ca \mid caC \mid caS$

4. Il y a plusieurs dérivations possibles (selon l'ordre choisi) ; mais, pour ce mot et pour cette grammaire, un seul arbre syntaxique possible.

$$\underline{S} \to \overline{\underline{S}cS} \to \overline{a\underline{S}b}cS \to a\overline{\underline{S}cS}bcS \to a\overline{d}c\underline{S}bcS \to adc\overline{d}bc\underline{S} \to adcdbc\overline{d}$$