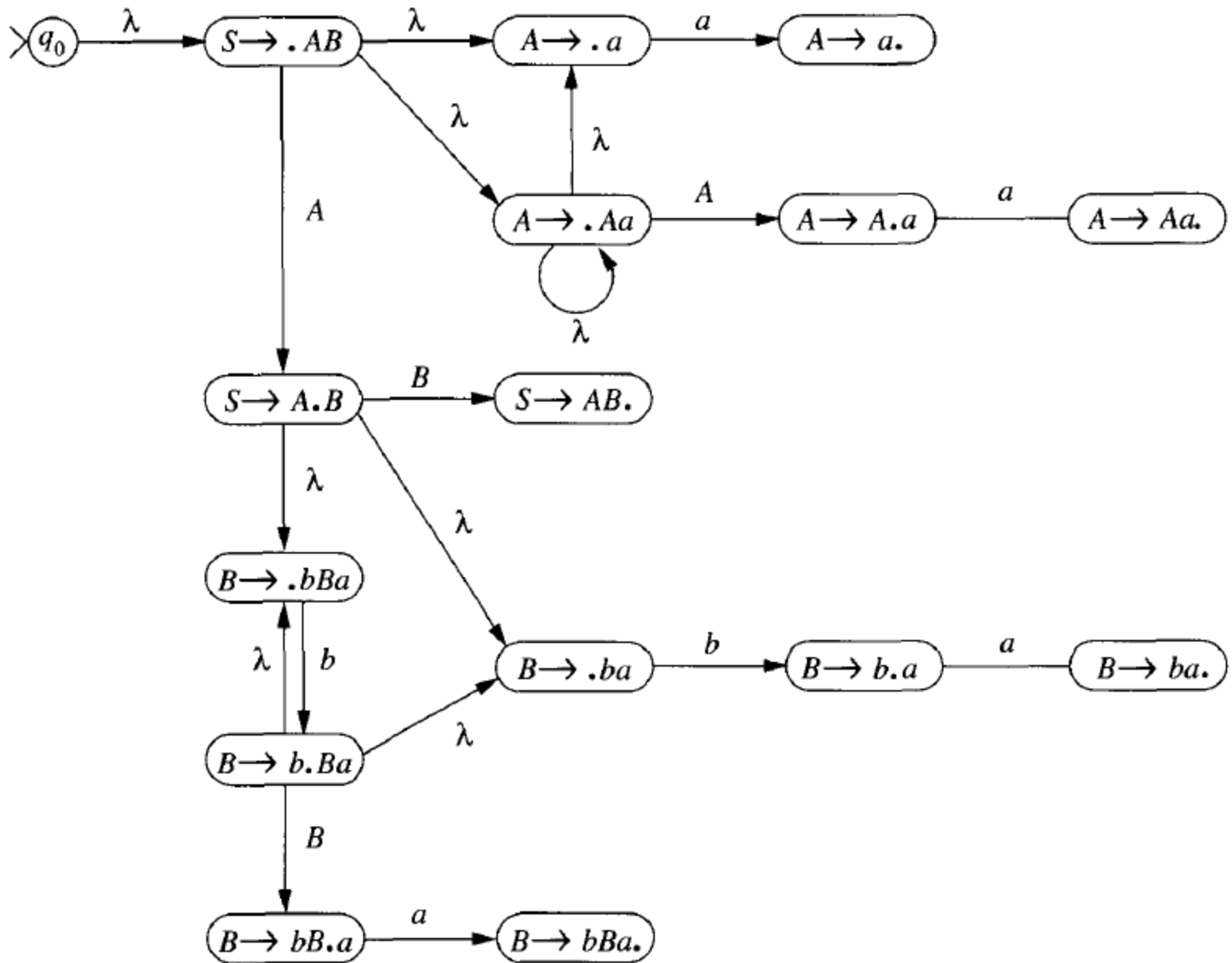


# Chapter 17

## LR(K) Grammar

<b>Rule</b>	<b>LR(0) Items</b>	<b>LR(0) Contexts</b>
$S \rightarrow AB$	$S \rightarrow .AB$ $S \rightarrow A.B$ $S \rightarrow AB.$	$\{AB\}$
$A \rightarrow Aa$	$A \rightarrow .Aa$ $A \rightarrow A.a$ $A \rightarrow Aa.$	$\{Aa\}$
$A \rightarrow a$	$A \rightarrow .a$ $A \rightarrow a.$	$\{a\}$
$B \rightarrow bBa$	$B \rightarrow .bBa$ $B \rightarrow b.Ba$ $B \rightarrow bB.a$ $B \rightarrow bBa.$	$\{Ab^iBa \mid i > 0\}$
$B \rightarrow ba$	$B \rightarrow .ba$ $B \rightarrow b.a$ $B \rightarrow ba.$	$\{Ab^iba \mid i \geq 0\}$



Non deterministic LR(0) machine

**Example: Construct LR(0) item and LR(0) contexts for the rules of the following grammar.**

$$S \rightarrow ABBa$$

$$A \rightarrow bAa / a$$

$$B \rightarrow a$$

**Build the nondeterministic LR(0) machine. Use this to construct the deterministic LR(0) machine.**

rule	LR(0) context	LR(0) item
$S \rightarrow ABBa$	$\{ABBa\}$	$S \rightarrow .ABBa$ $S \rightarrow A.BBa$ $S \rightarrow AB.Ba$ $S \rightarrow ABB.a$ $S \rightarrow ABBa.$
$A \rightarrow \underline{b}Aa$	$\{b^i Aa, i > 0\}$	$A \rightarrow .\underline{b}Aa$ $A \rightarrow \underline{b}.Aa$ $A \rightarrow \underline{b}A.a$ $A \rightarrow \underline{b}Aa.$
$A \rightarrow \underline{a}$	$\{\underline{b}^i a, i \geq 0\}$	$A \rightarrow .\underline{a}$ $A \rightarrow \underline{a}.$
$B \rightarrow a$	$\{\underline{A}Ba, Aa\}$	$B \rightarrow .a$ $B \rightarrow a.$

