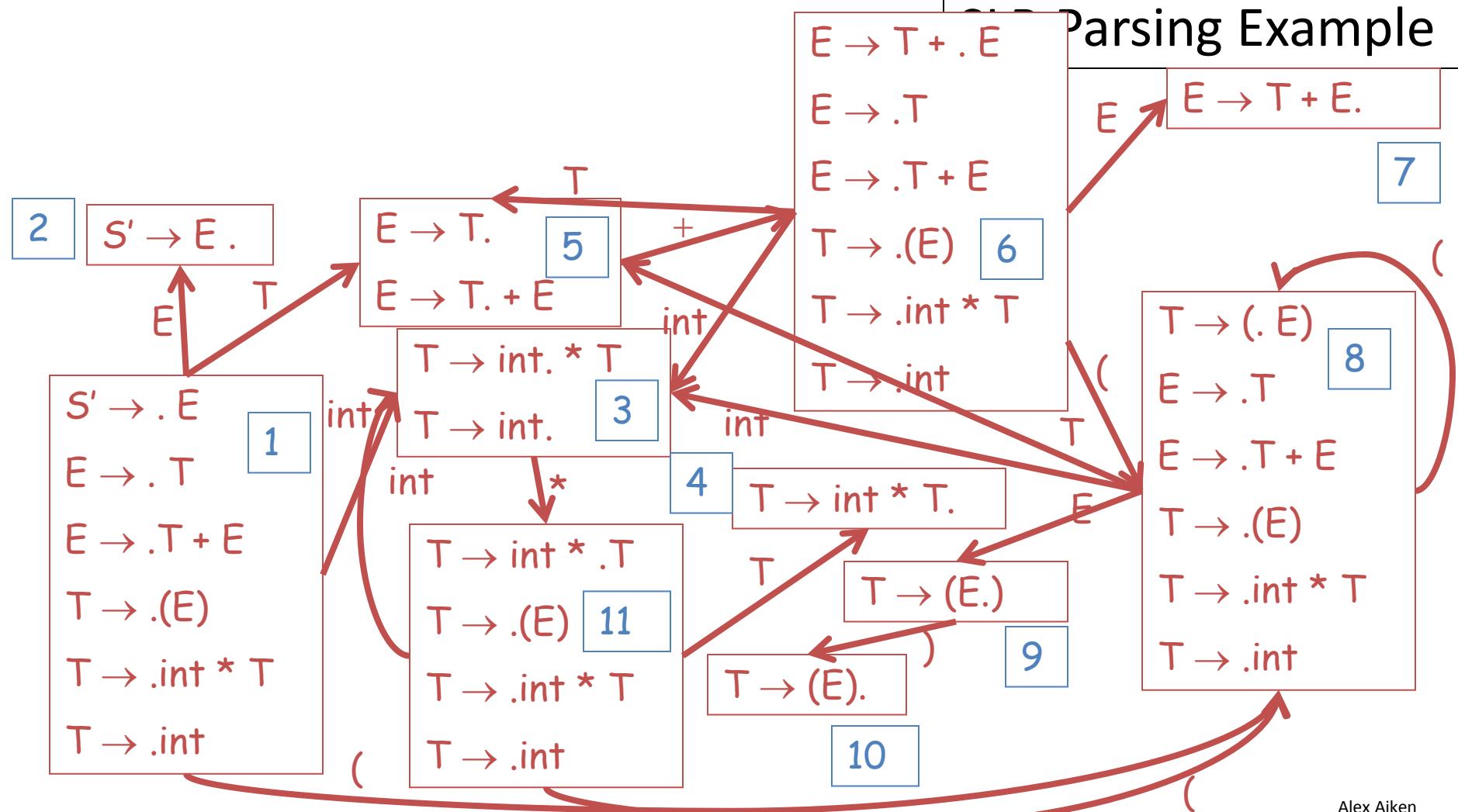


Compilers

SLR Parsing Example

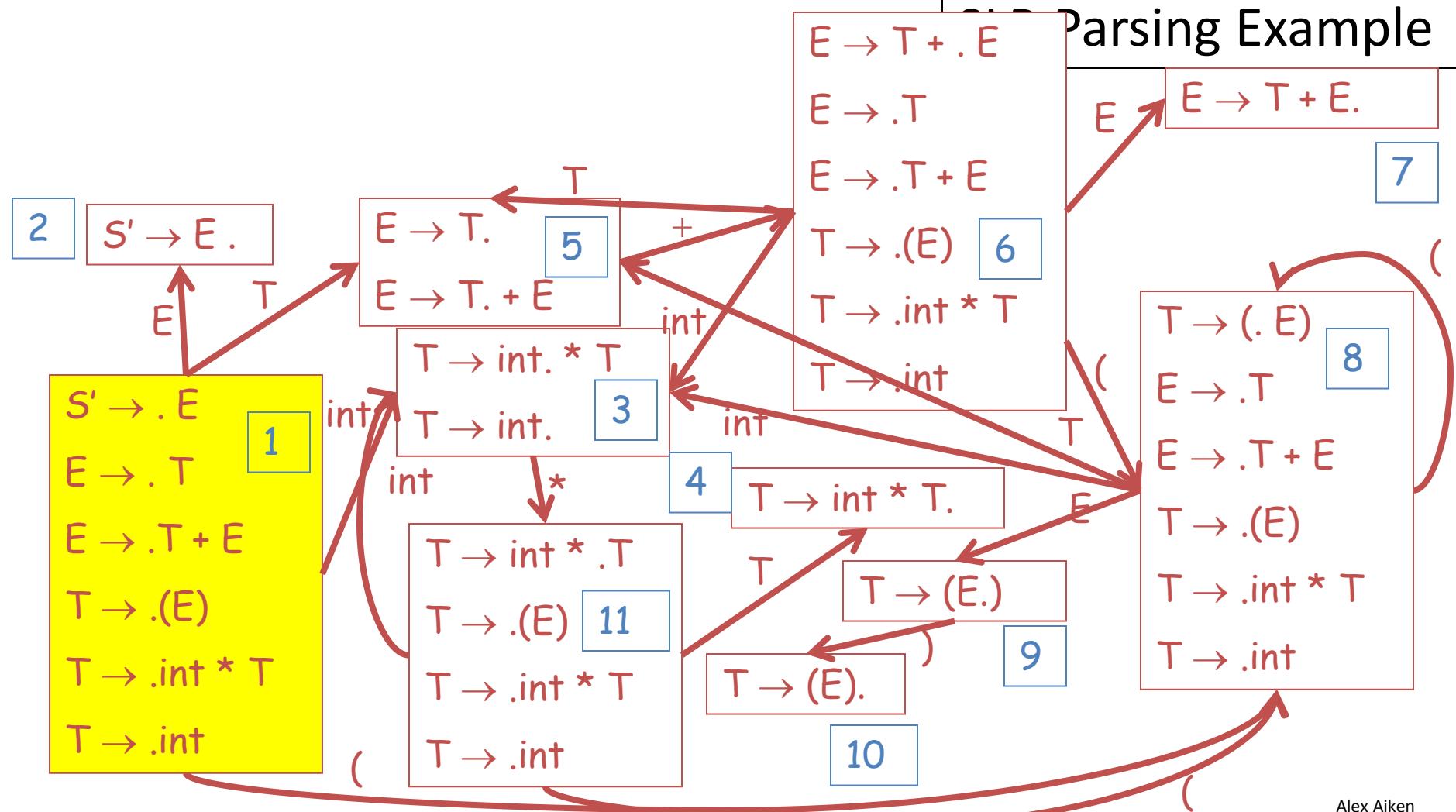
Parsing Example



SLR Parsing Example

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$		

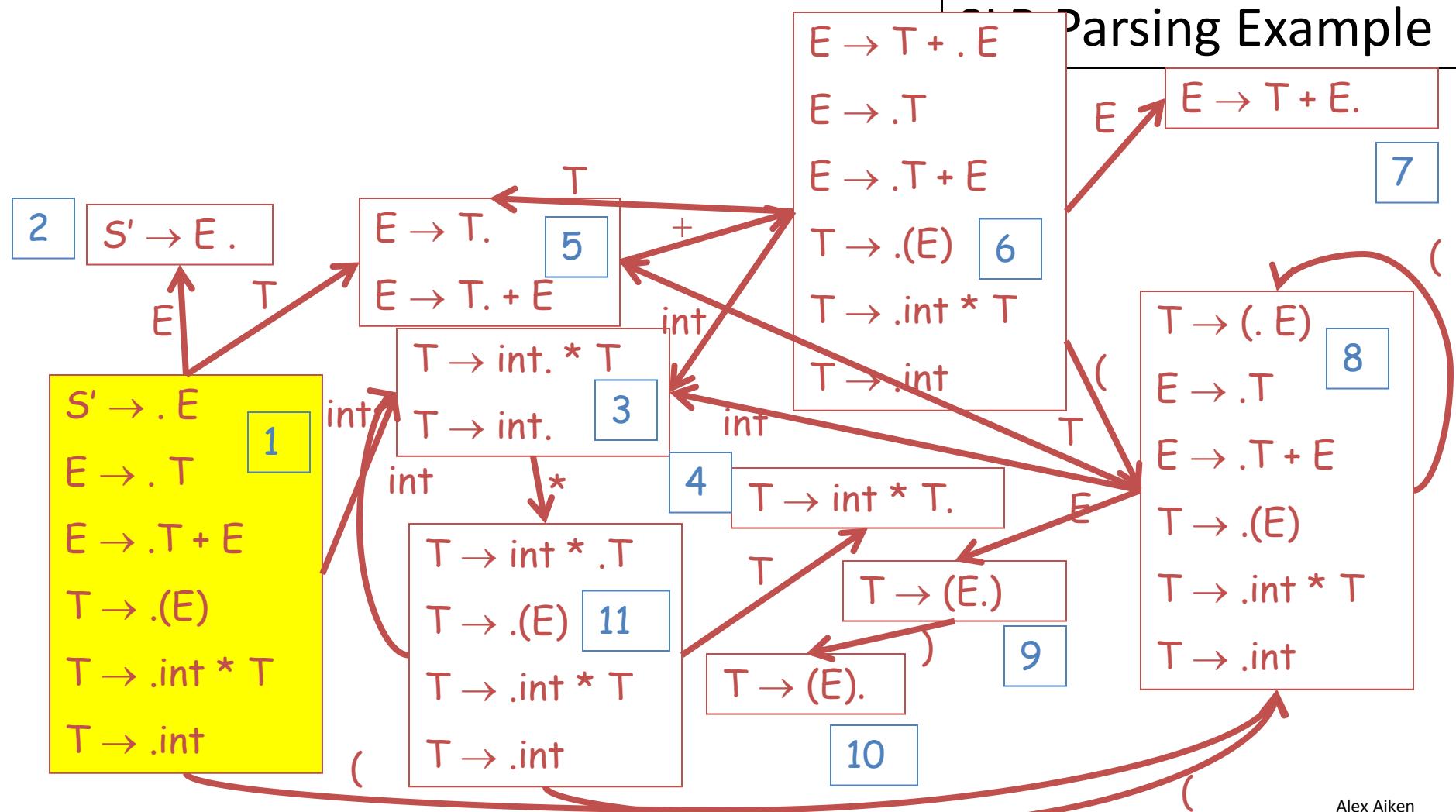
Parsing Example



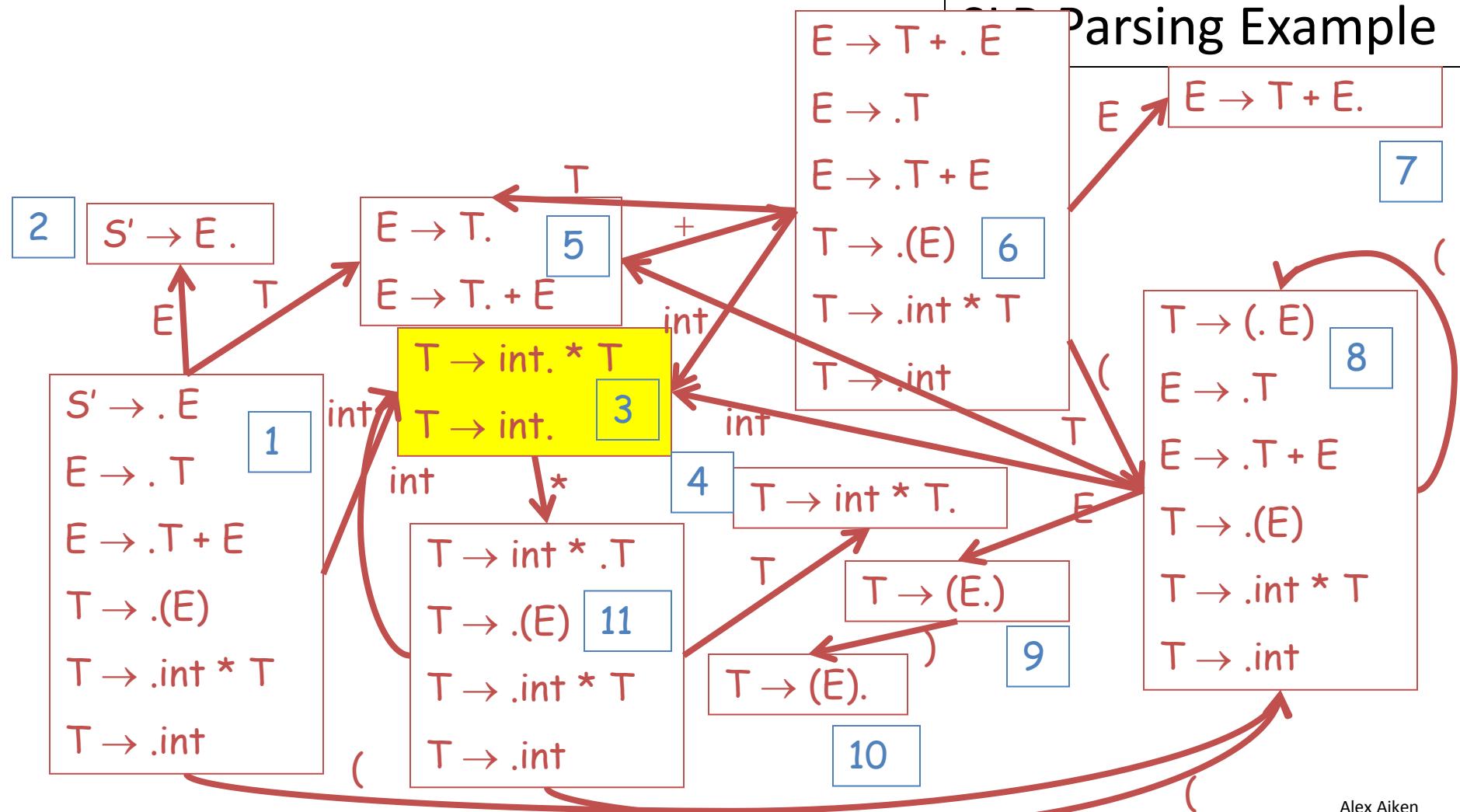
SLR Parsing Example

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$		

Parsing Example

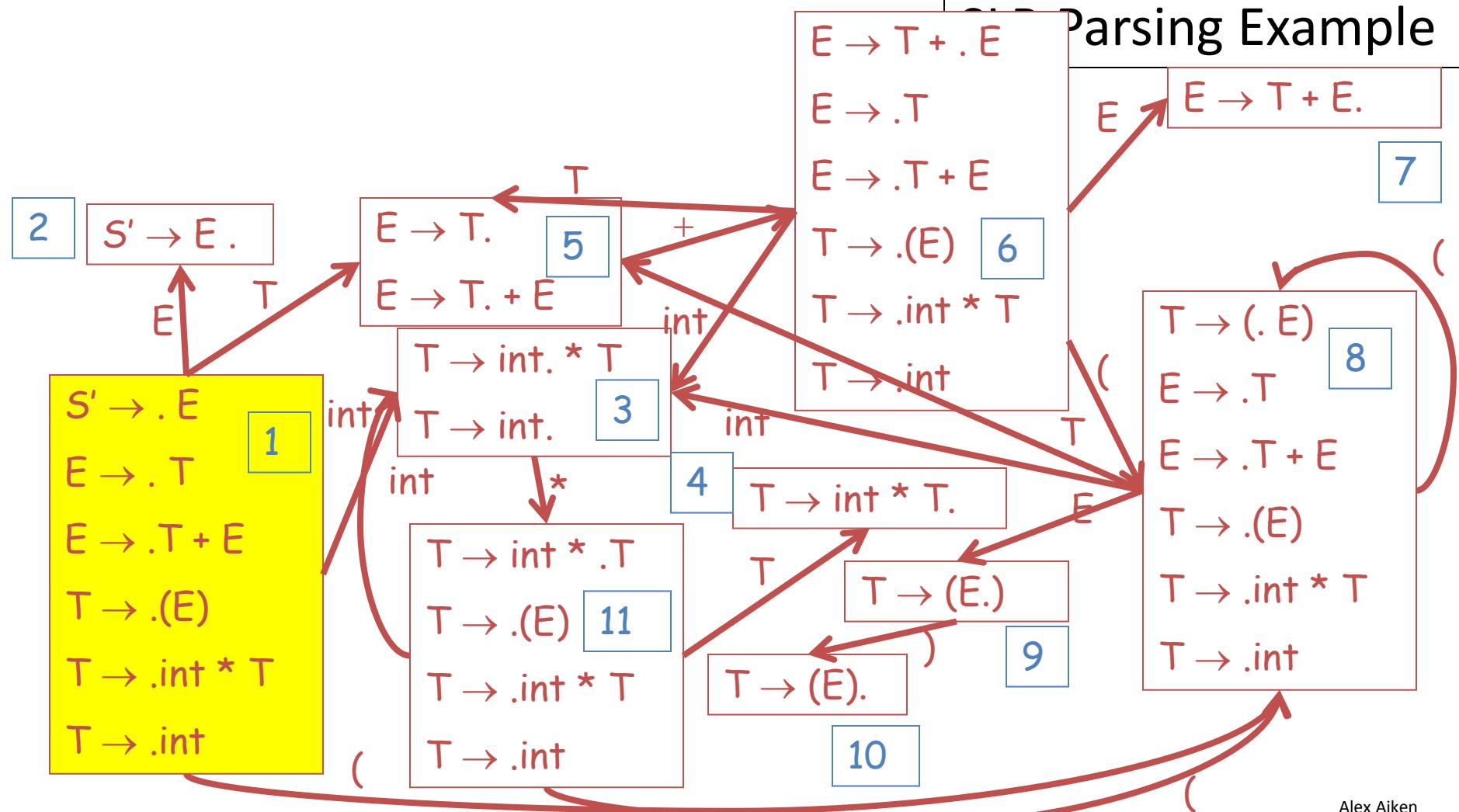


Parsing Example

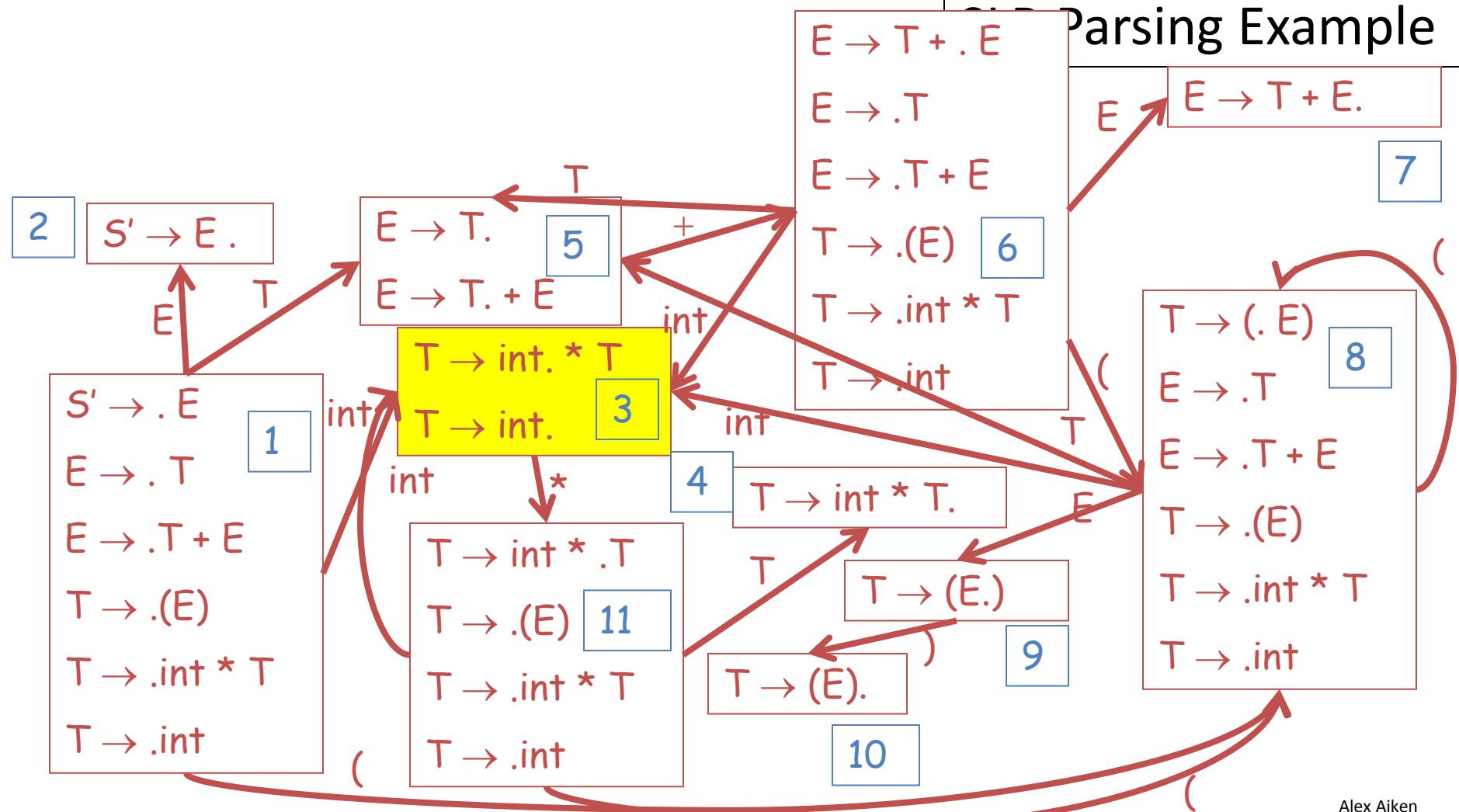


<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$		

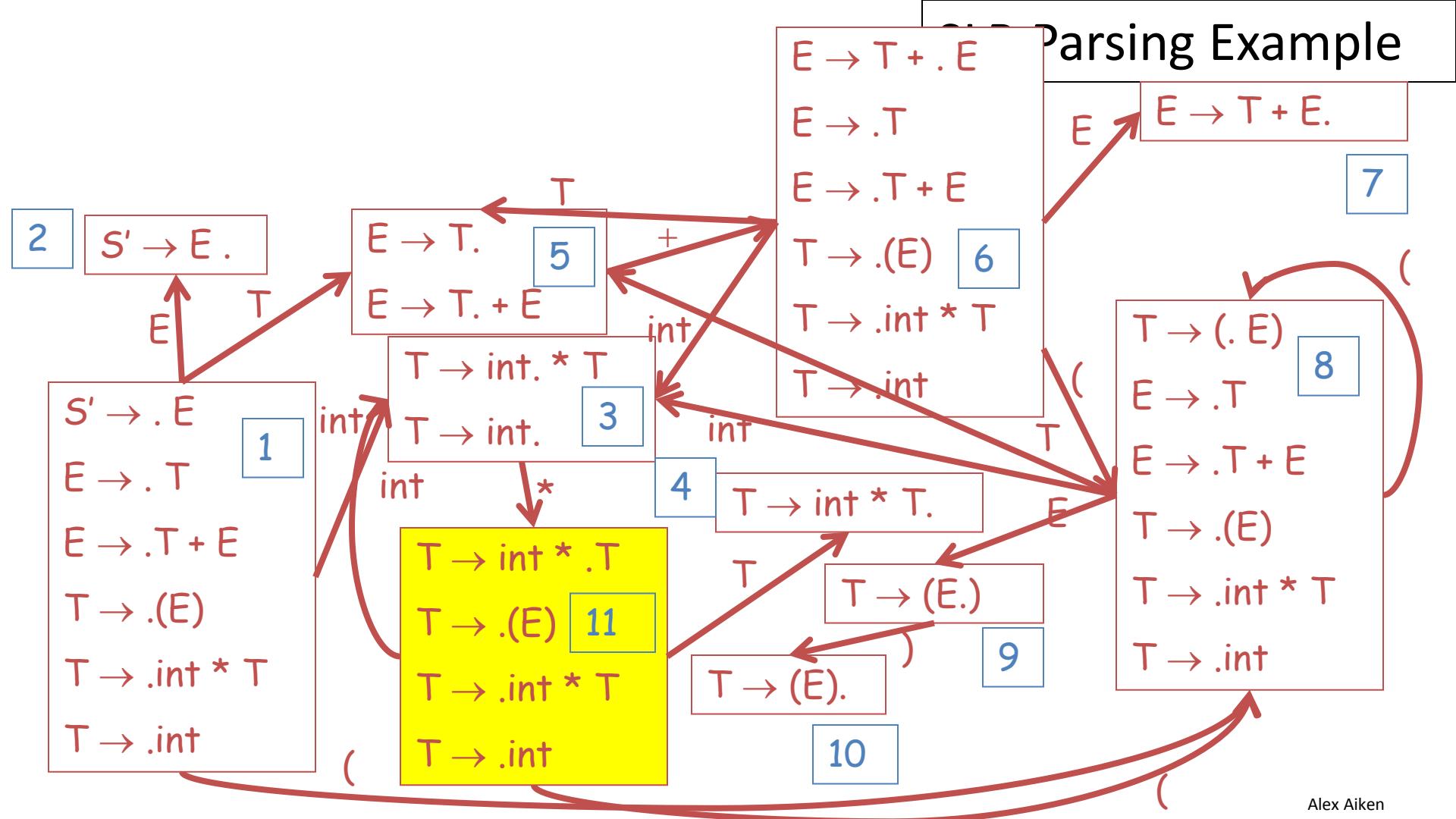
Parsing Example



Parsing Example

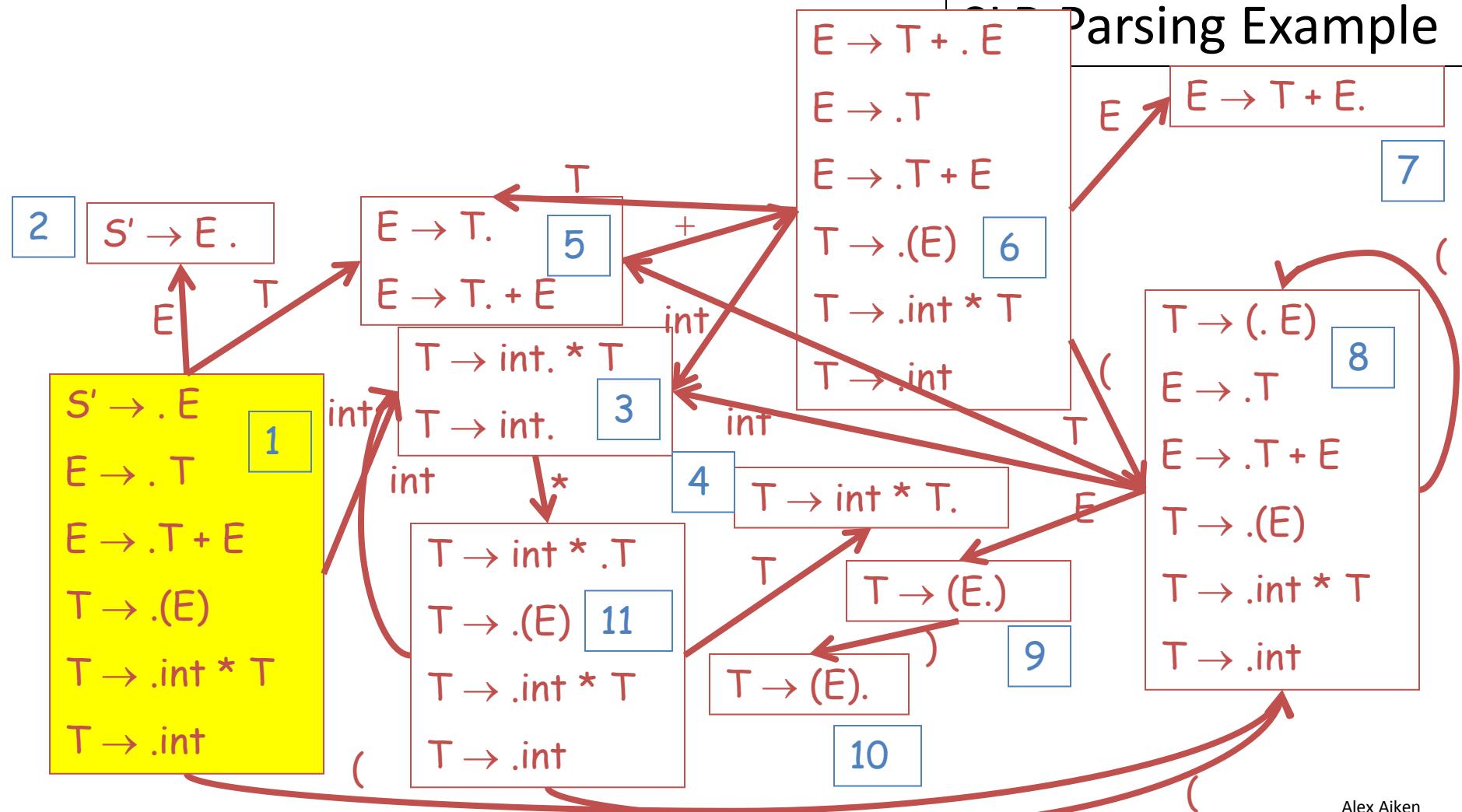


Parsing Example

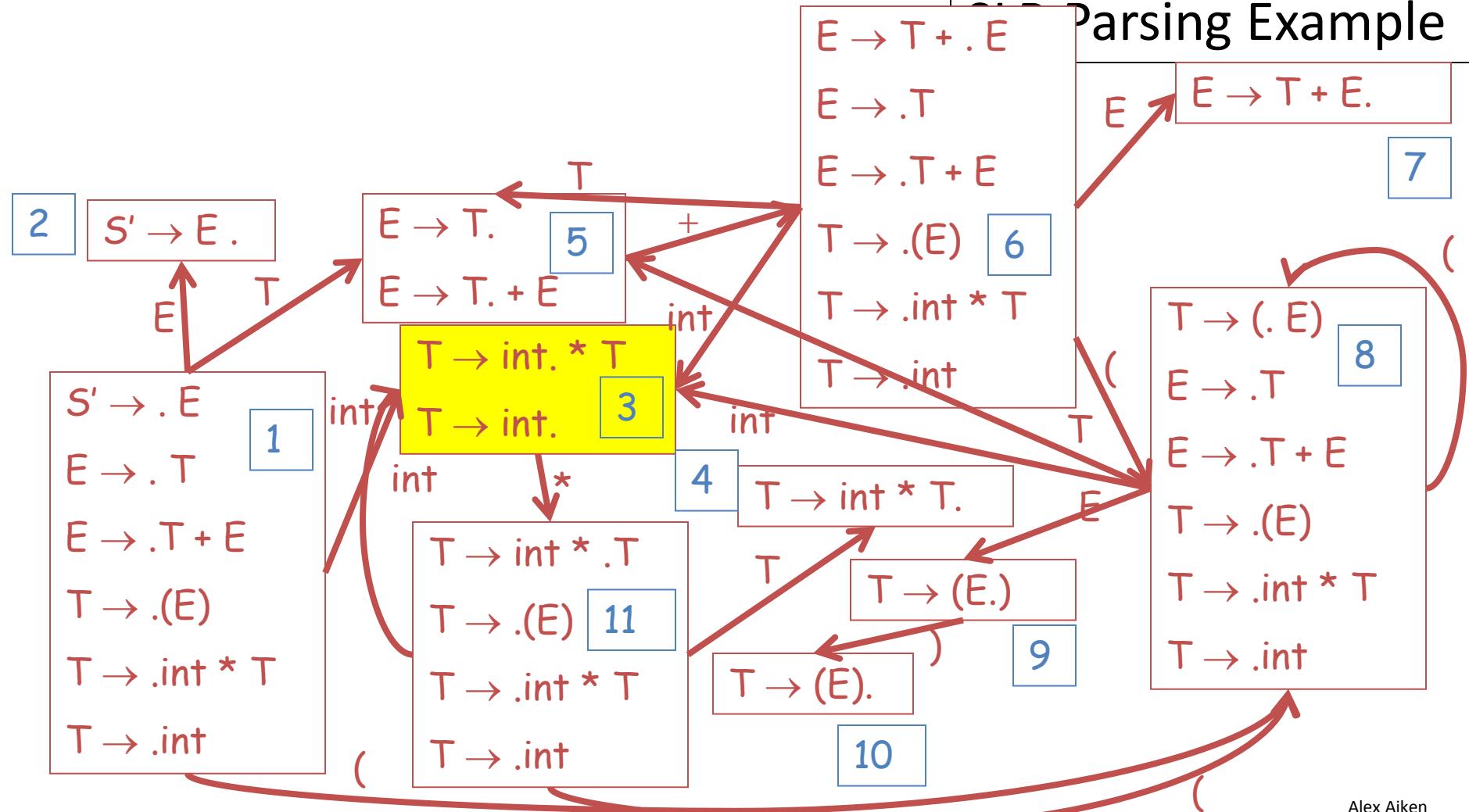


<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$	11	shift
int * int \$		

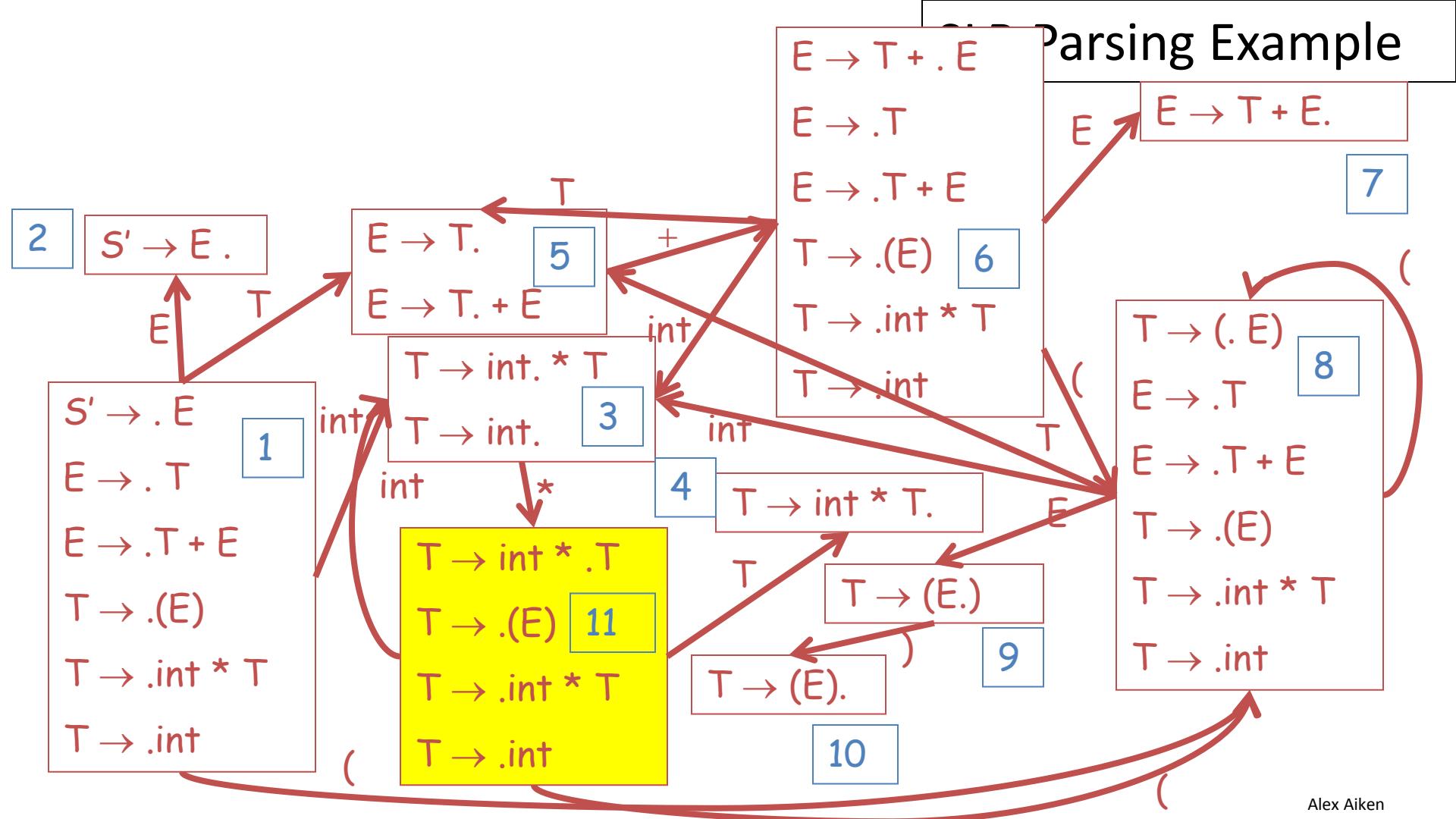
Parsing Example



Parsing Example



Parsing Example



Parsing Example

2

 $S' \rightarrow E.$
 $E \xrightarrow{T} S' \rightarrow E.$

1

 $S' \rightarrow .E$ $E \rightarrow .T$ $E \rightarrow .T + E$ $T \rightarrow .(E)$ $T \rightarrow .int * T$ $T \rightarrow .int$ $E \rightarrow T.$
 $E \rightarrow T. + E$
 $T \rightarrow int. * T$
 $T \rightarrow int.$

3

T

 $+ .$

int

int

4

 $T \rightarrow int * T.$ $T \rightarrow int * .T$ $T \rightarrow .(E)$ $T \rightarrow .int * T$ $T \rightarrow .int$ $T \rightarrow (E.)$ $T \rightarrow (E).$ $E \rightarrow T + .E$ $E \rightarrow .T$ $E \rightarrow .T + E$ $T \rightarrow .(E)$ $T \rightarrow .int * T$ $T \rightarrow .int$ $E \rightarrow T + E.$

E

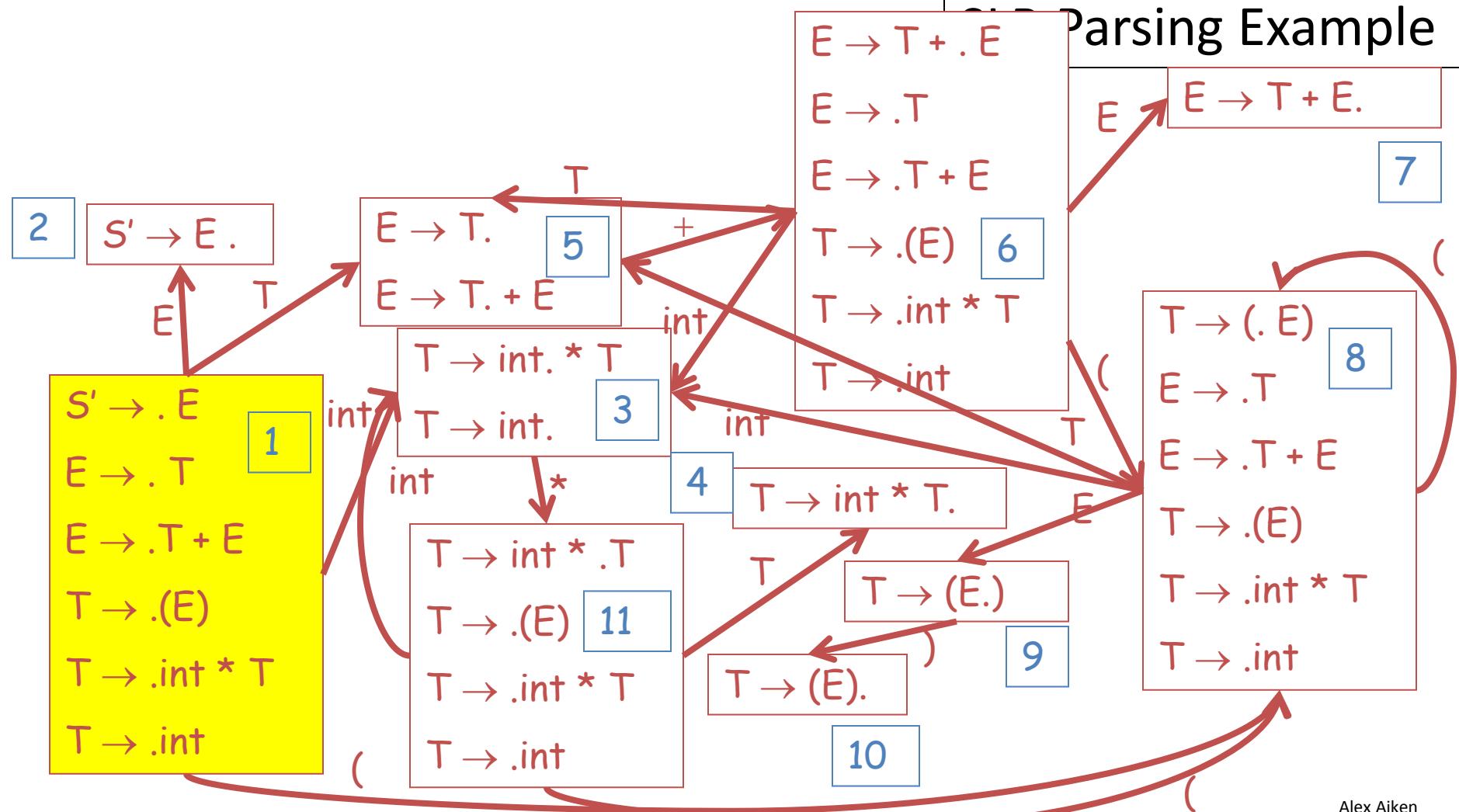
7

 $T \rightarrow (. E)$ $E \rightarrow .T$ $E \rightarrow .T + E$ $T \rightarrow .(E)$ $T \rightarrow .int * T$ $T \rightarrow .int$ $T \rightarrow (E.)$ $T \rightarrow (E).$

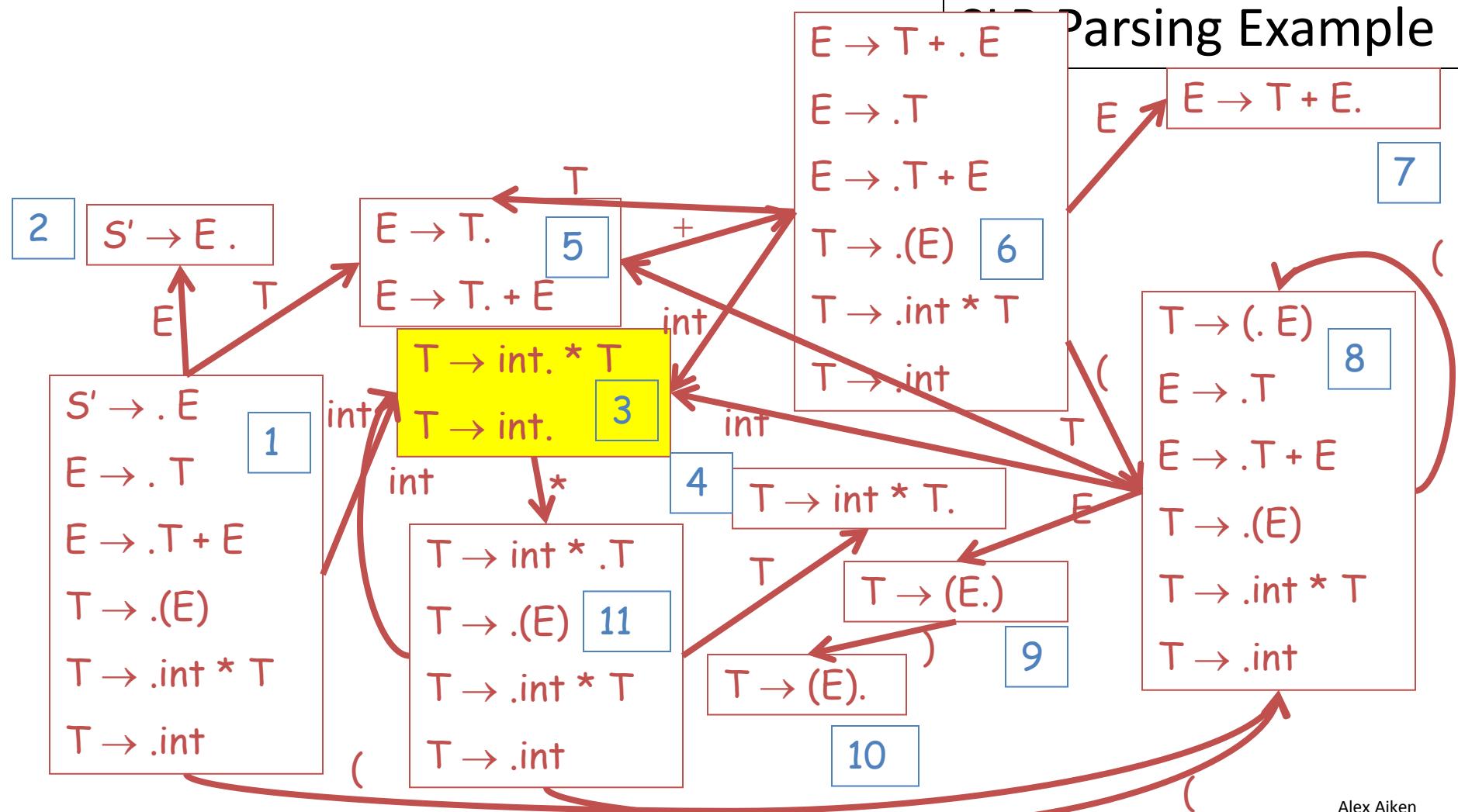
8

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$	11	shift
int * int \$	3 \$ ∈ Follow(T)	red. T → int
int * T \$		

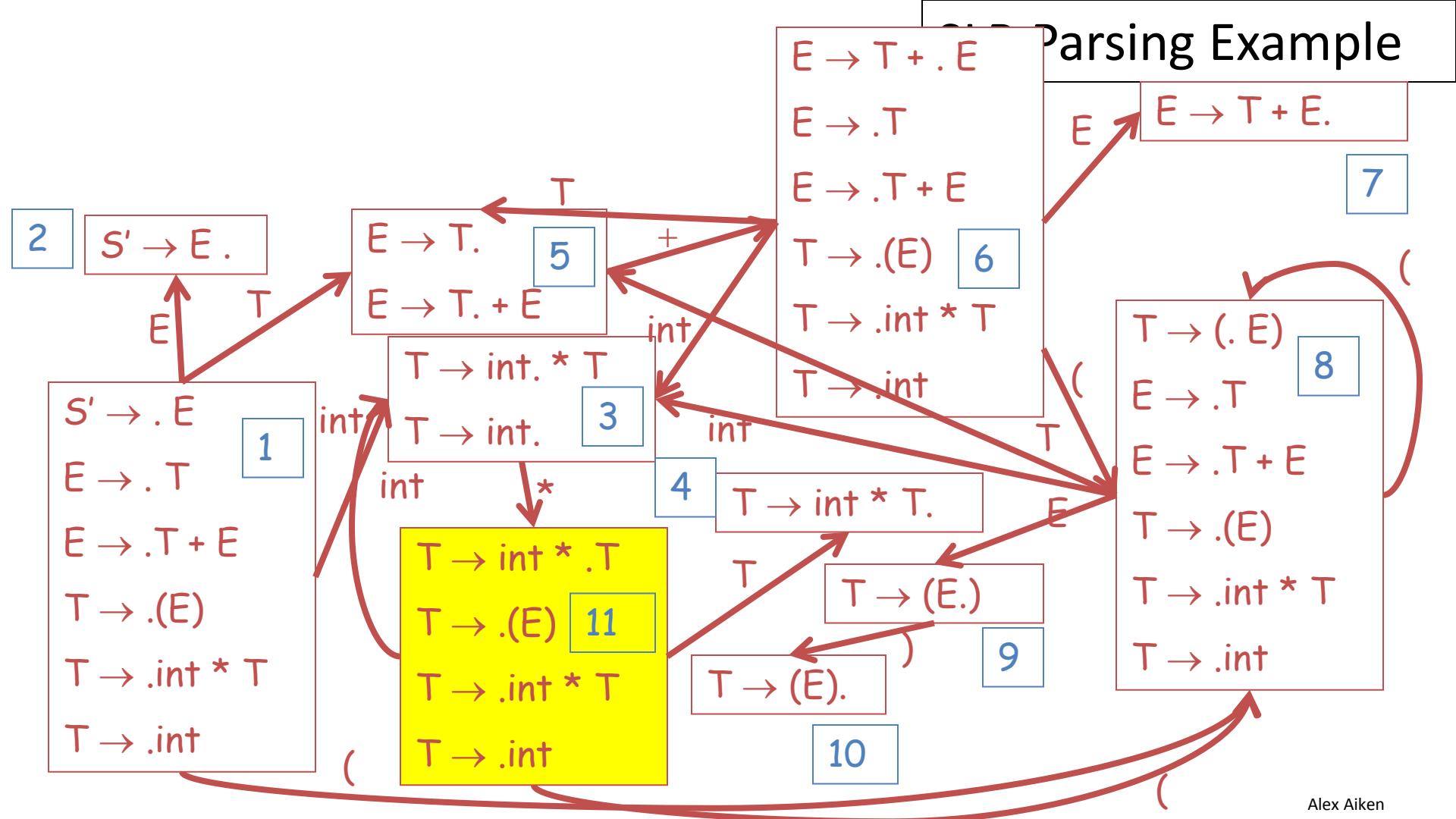
Parsing Example



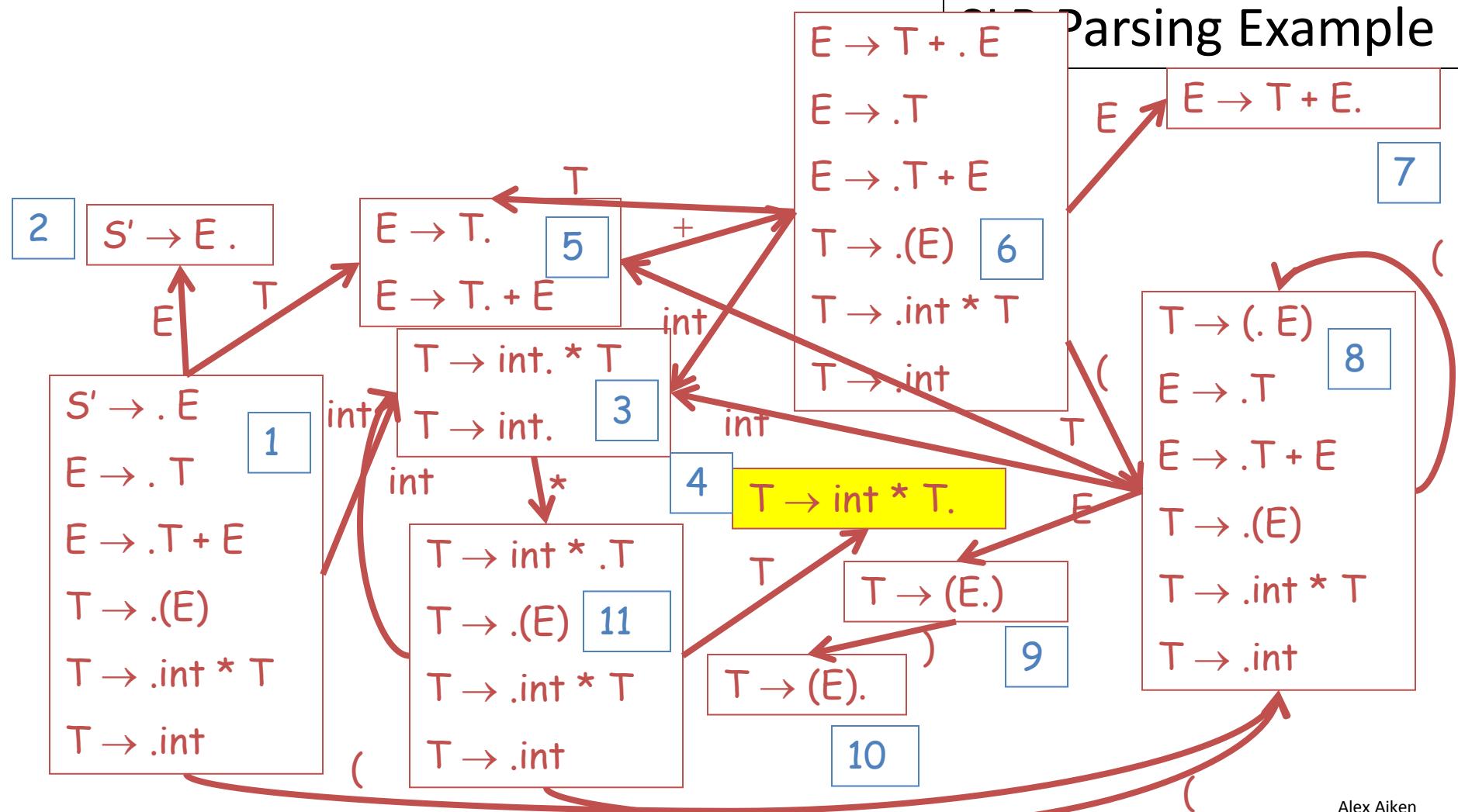
Parsing Example



Parsing Example



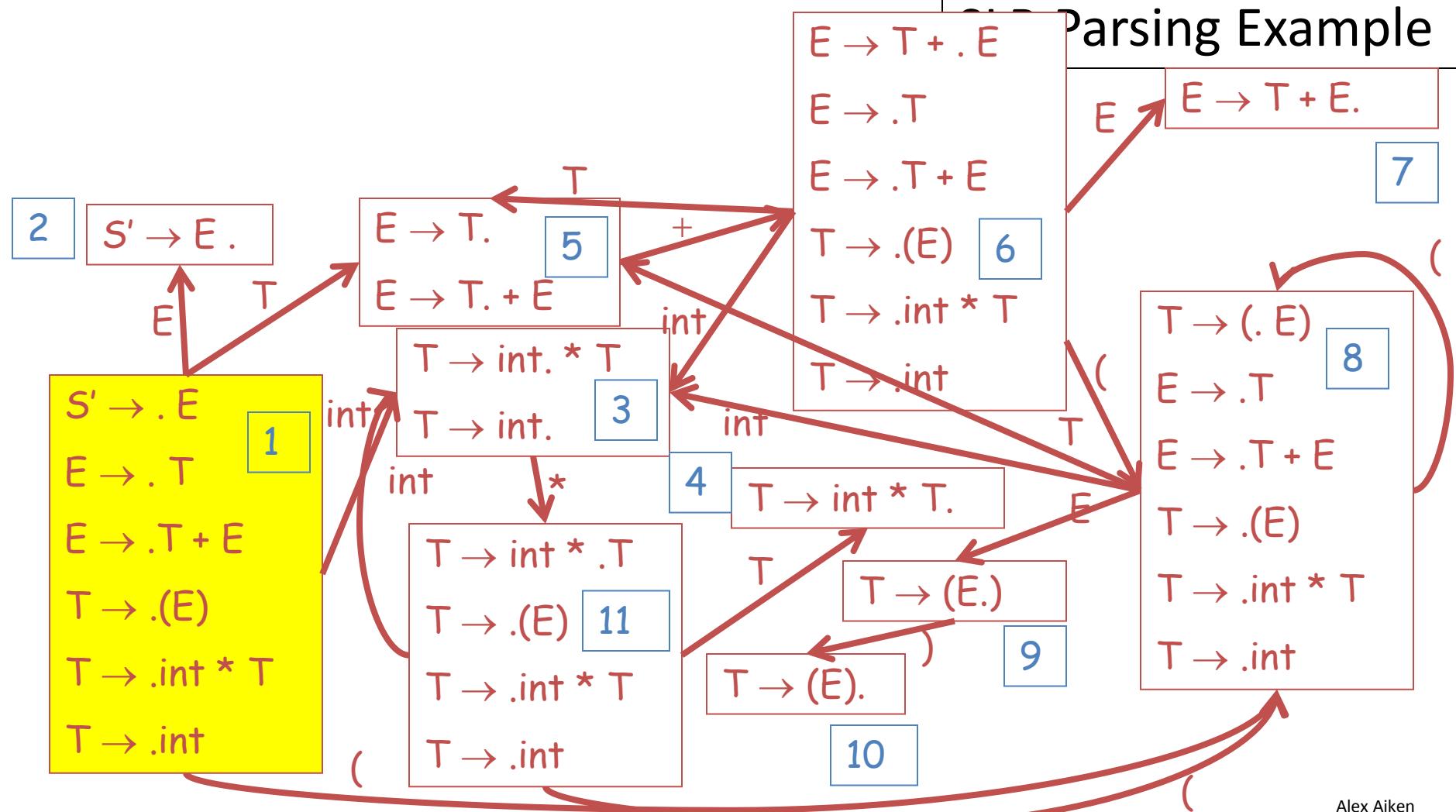
Parsing Example



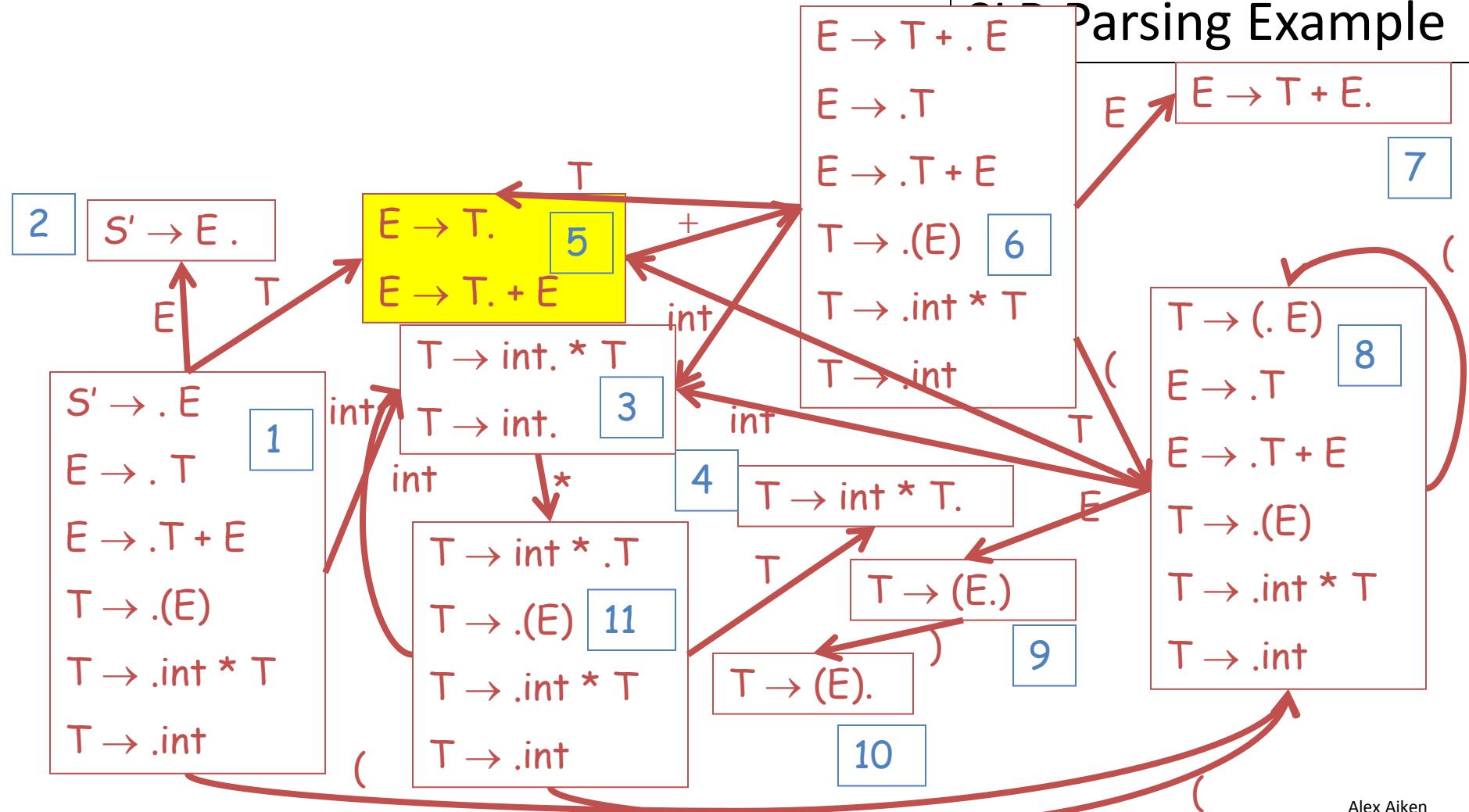
SLR Parsing Example

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$	11	shift
int * int \$	3 \$ ∈ Follow(T)	red. T → int
int * T \$	4 \$ ∈ Follow(T)	red. T → int*T
T \$		

Parsing Example



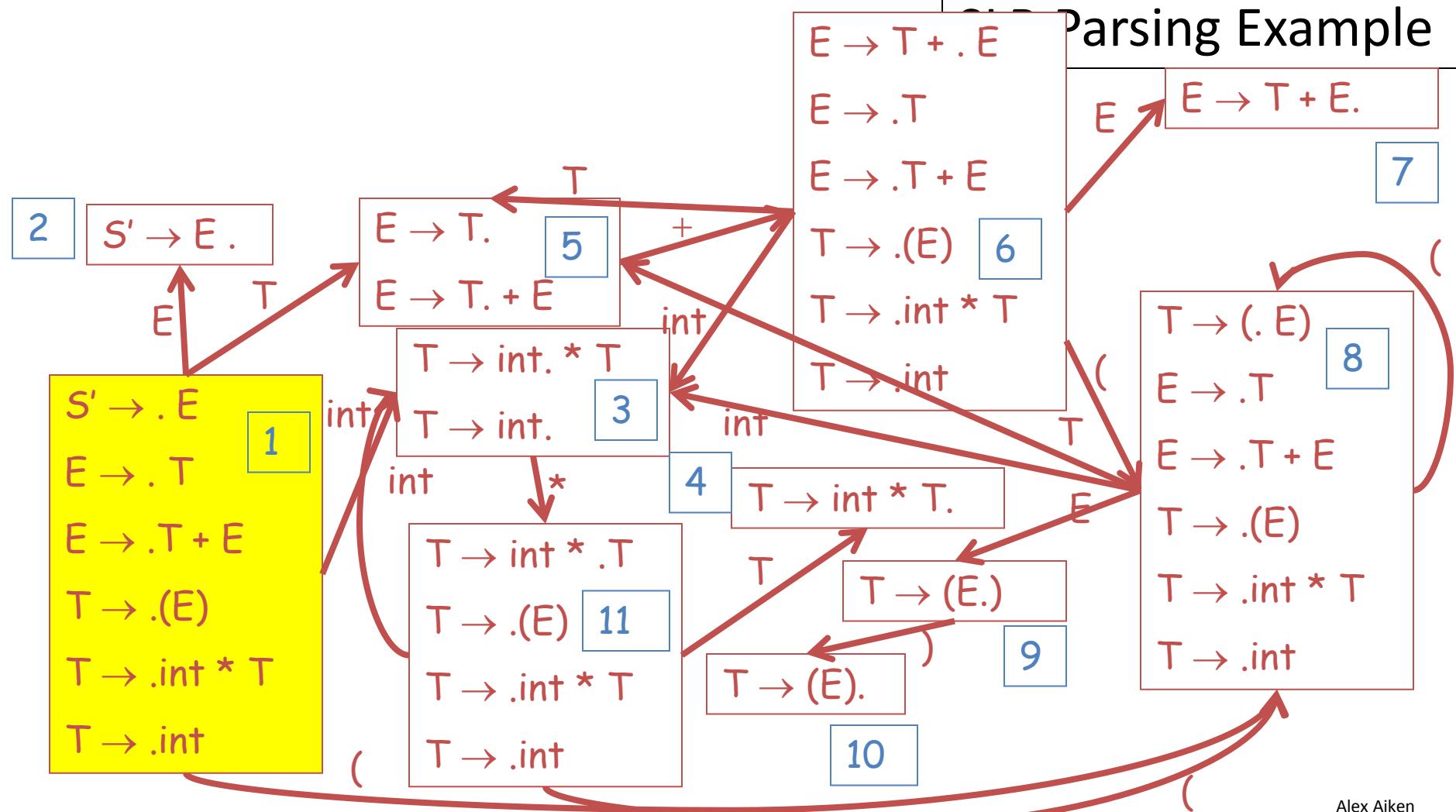
Parsing Example



SLR Parsing Example

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$	11	shift
int * int \$	3 \$ ∈ Follow(T)	red. T → int
int * T \$	4 \$ ∈ Follow(T)	red. T → int*T
T \$	5 \$ ∈ Follow(E)	red. E → T
E \$		

Parsing Example



Parsing Example

2

 $S' \rightarrow E.$
 $E \rightarrow E$
 T

1

 $S' \rightarrow .E$
 $E \rightarrow .T$
 $E \rightarrow .T + E$
 $T \rightarrow .(E)$
 $T \rightarrow .int * T$
 $T \rightarrow .int$
 $E \rightarrow T.$
 $E \rightarrow T. + E$
 T
 $T \rightarrow int.$
 $T \rightarrow int. *$
 $+ E$
 $int *$
 T
 $T \rightarrow int.$
 $T \rightarrow int. *$
 T
 $T \rightarrow int.$
 int
 T
 $T \rightarrow int. *$
 T
 $T \rightarrow int.$
 int
 T
 $T \rightarrow int. *$
 T
 $T \rightarrow int.$
 T
 $T \rightarrow int. *$
 T
 $T \rightarrow int.$
 T
 $T \rightarrow int. *$
 T

5

3

4

11

9

10

7

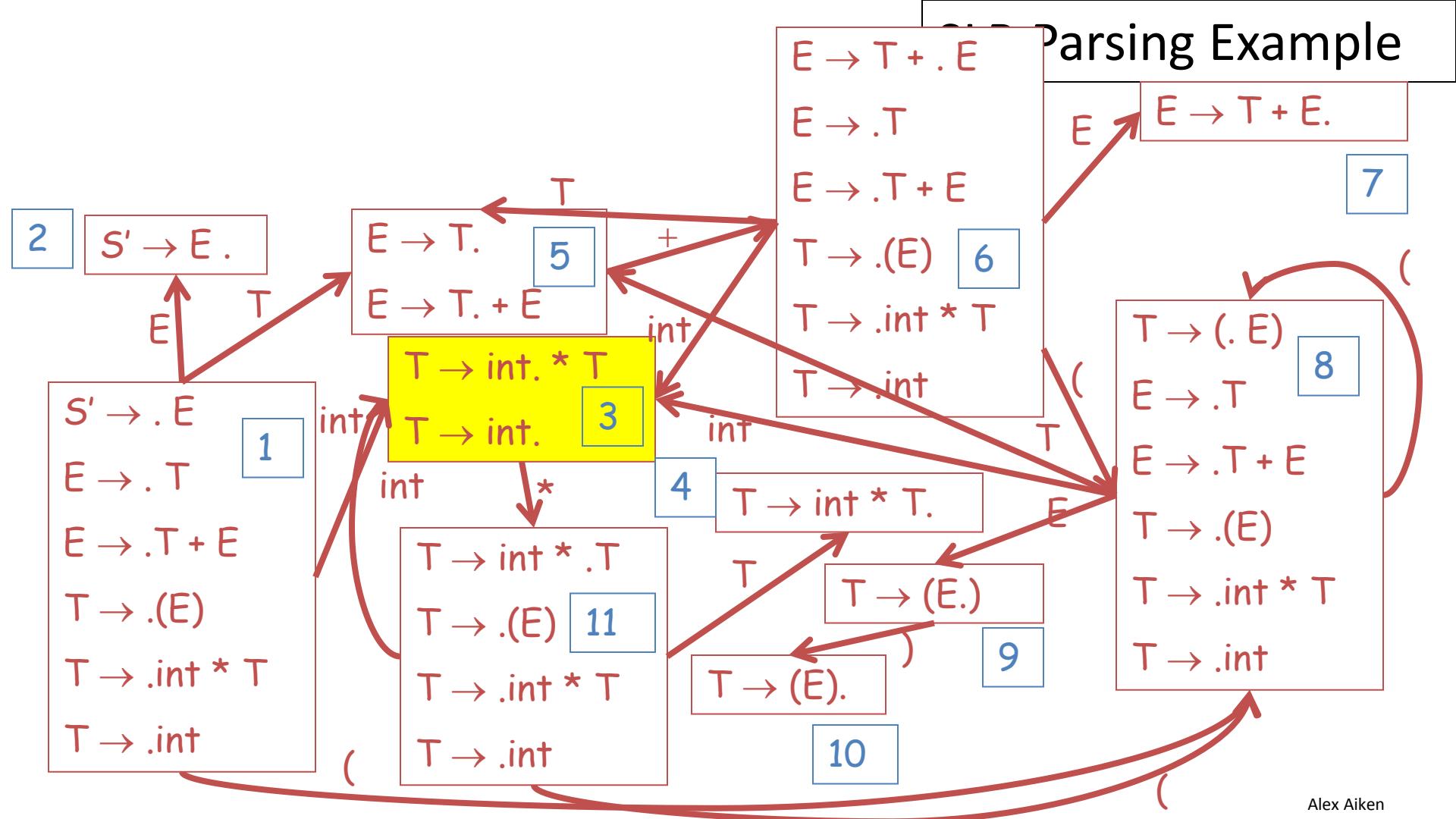
8

Alex Aiken

SLR Parsing Example

<i>Configuration</i>	<i>DFA Halt State</i>	<i>Action</i>
int * int\$	1	shift
int * int\$	3 * not in Follow(T)	shift
int * int\$	11	shift
int * int \$	3 $\$ \in \text{Follow}(T)$	red. $T \rightarrow \text{int}$
int * T \$	4 $\$ \in \text{Follow}(T)$	red. $T \rightarrow \text{int}^*T$
T \$	5 $\$ \in \text{Follow}(T)$	red. $E \rightarrow T$
E \$		accept

Parsing Example



Using the DFA on the previous slide, choose
the next action for the given parse state

<u>Configuration</u>	<u>DFA Halt State</u>
int * int + int \$	3

- shift
- red. $T \rightarrow \text{int}$
- red. $T \rightarrow \text{int} * T$
- accept

To show the
automaton, click
“Hide Question”

