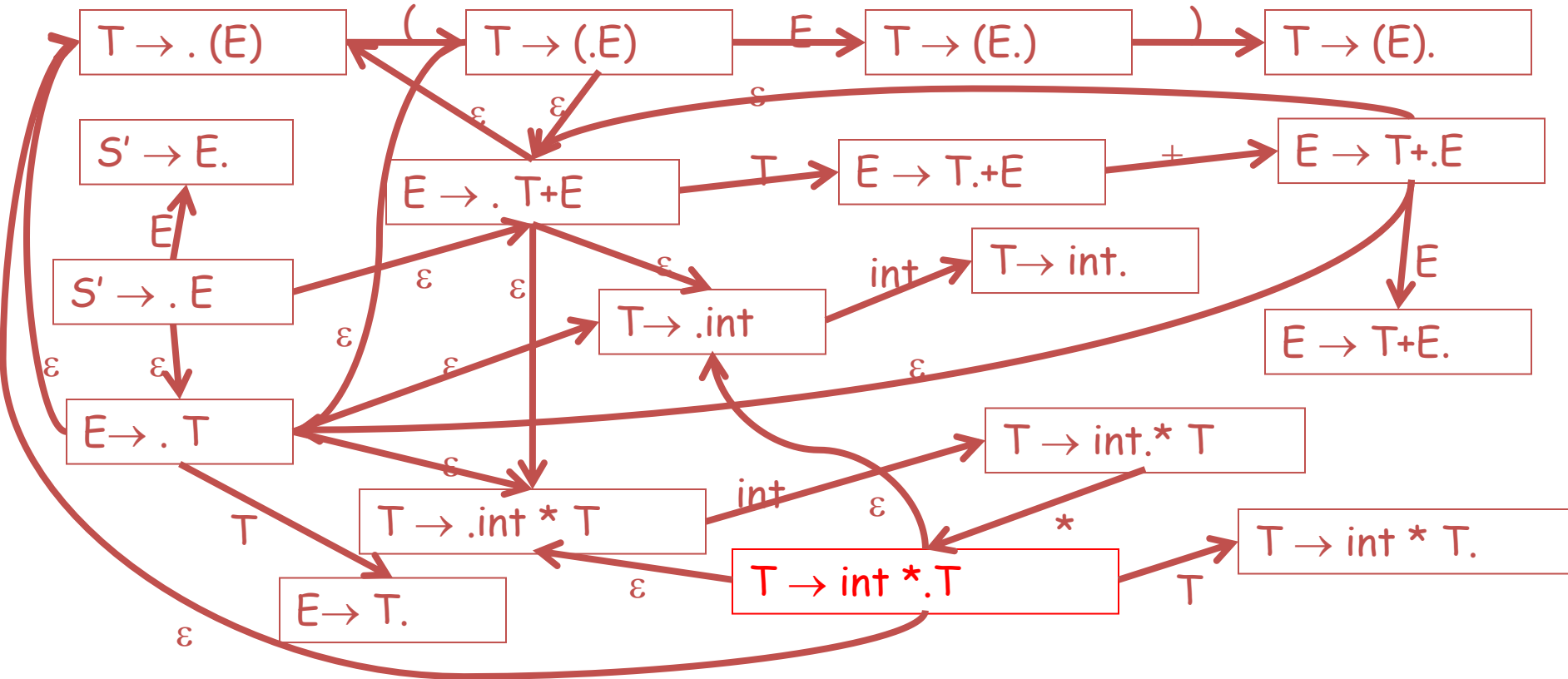




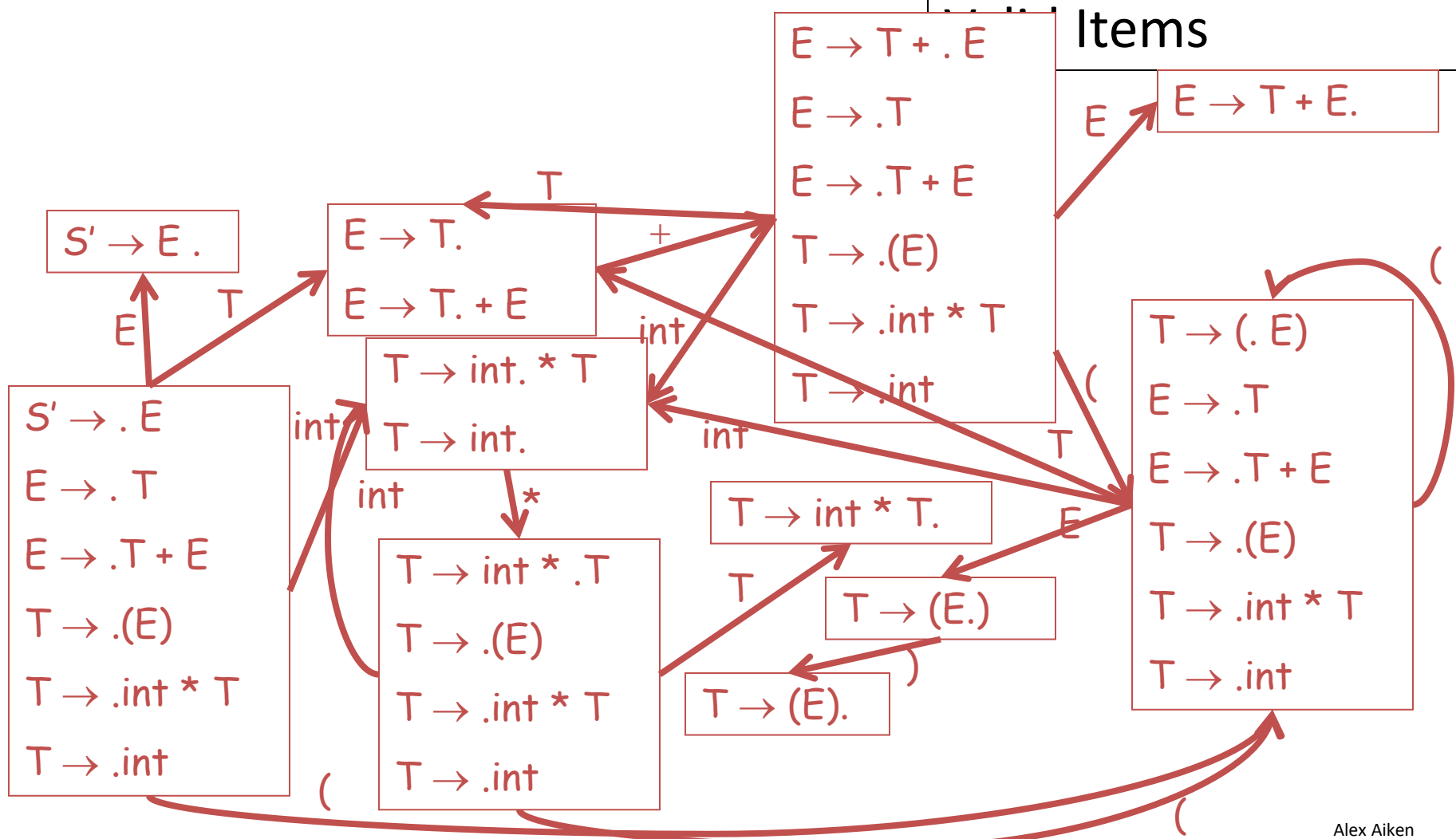
Compilers

Valid Items

Valid Items



Items



The states of the DFA are

“canonical collections of items”

or

“canonical collections of LR(0) items”

The Dragon book gives another way of constructing
LR(0) items

Item $X \rightarrow \beta.\gamma$ is *valid* for a viable prefix $\alpha\beta$ if

$$S' \rightarrow^* \alpha X \omega \rightarrow \alpha \beta \gamma \omega$$

by a right-most derivation

After parsing $\alpha\beta$, the valid items are the possible tops of the stack of items

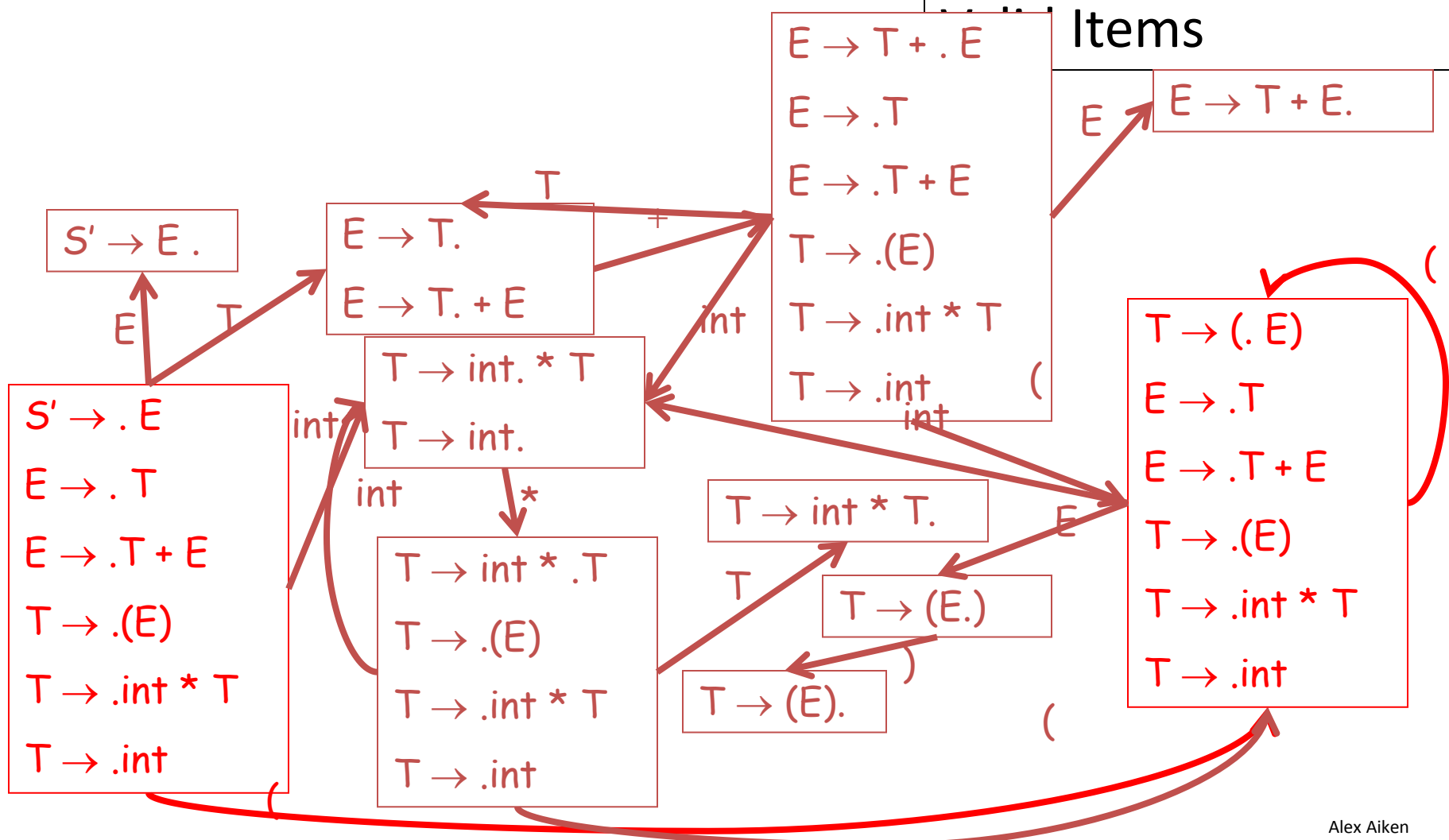
An item I is valid for a viable prefix α if the DFA recognizing viable prefixes terminates on input α in a state s containing I

The items in s describe what the top of the item stack might be after reading input α

- An item is often valid for many prefixes
- Example: The item $T \rightarrow (.E)$ is valid for prefixes

(
((
(((
((((
...

Items



Using the automaton on the previous slide, choose the valid items for the prefix: $(int *$

☐ $E \rightarrow (.E)$

☐ $T \rightarrow int *.T$

☐ $E \rightarrow .T + E$

☐ $T \rightarrow .int$

To show the
automaton, click
“Hide Question”

