The space of states is defined inductively as follows:

$$\sigma ::= \sigma \otimes \sigma \mid x \to \nu$$

That is, a state is either a product of two states, or is a mapping from variables to values.
An assertion (P, Q, etc) is a mapping from states to propositions, as in traditional Hoare Logic:

$$P : \sigma \to \mathsf{Prop}$$

$$\textsc{Part}\ \frac{\begin{array}{c} c_0\ \mathsf{part}\ c_1 \cdot c_2 \qquad \Gamma \vdash \{P\}\ c_1\ \{R\} \\ \Gamma \vdash \{\mathsf{pairwise}\ P\ R\}\ c_1 \times c_2\ \{\mathsf{pairwise}\ R\ Q\} \end{array}}{\Gamma \vdash \{P\}\ c_0\ \{Q\}}$$

$$\textsc{Split}\ \frac{\begin{array}{cc} \Gamma \vdash \{P_0\}\ c_0\ \{Q_0\} & \forall st_0, st_1.\ P\ (st_0 \otimes st_1) \Rightarrow P_0\ st_0 \wedge P_1\ st_1 \\ \Gamma \vdash \{P_1\}\ c_1\ \{Q_1\} & \forall st_0, st_1.\ Q\ (st_0 \otimes st_1) \Leftarrow Q_0\ st_0 \wedge Q_1\ st_1 \end{array}}{\Gamma \vdash \{P\}\ c_0 \times c_1\ \{Q\}}$$

$$\textsc{Comm}\ \frac{\Gamma \vdash \{\mathsf{commute}\ P\}\ c_1 \times c_0\ \{\mathsf{commute}\ Q\}}{\Gamma \vdash \{P\}\ c_0 \times c_1\ \{Q\}} \qquad \textsc{Assoc}\ \frac{\Gamma \vdash \{\mathsf{associate}\ P\}\ (c_0 \times c_1) \times c_2\ \{\mathsf{associate}\ Q\}}{\Gamma \vdash \{P\}\ c_0 \times (c_1 \times c_2)\ \{Q\}}$$

$$\textsc{If}\ \frac{\begin{array}{c} \Gamma \vdash \{P \wedge \quad e\}\ c_0 \times c_2\ \{Q\} \\ \Gamma \vdash \{P \wedge \neg e\}\ c_1 \times c_2\ \{Q\} \end{array}}{\Gamma \vdash \{P\}\ \mathsf{if}\ e\ \mathsf{then}\ c_0\ \mathsf{else}\ c_1\ \mathsf{fi} \times c_2\ \{Q\}}$$

$$\textsc{While}\ \frac{\Gamma \cup \{P\}\ \mathsf{while}\ e\ \mathsf{do}\ c_0\ \mathsf{done} \times c_1\ \{Q \wedge \neg e\} \vdash \{P\}\ \mathsf{if}\ e\ \mathsf{then}\ c_0\ \mathsf{else\ skip\ fi}\ ;\ \mathsf{while}\ e\ \mathsf{do}\ c_0\ \mathsf{done} \times c_1\ \{Q\}}{\Gamma \vdash \{P\}\ \mathsf{while}\ e\ \mathsf{do}\ c_0\ \mathsf{done} \times c_1\ \{Q \wedge \neg e\}}$$

$$\begin{aligned} \mathsf{pairwise}\ P\ Q\ (\sigma_0 \otimes \sigma_1) &:= P\ \sigma_0 \wedge Q\ \sigma_1 \\ \mathsf{commute}\ P\ (\sigma_0 \otimes \sigma_1) &:= P\ (\sigma_1 \otimes \sigma_0) \\ \mathsf{associate}\ P\ ((\sigma_0 \otimes \sigma_1) \otimes \sigma_2)) &:= P\ (\sigma_0 \otimes (\sigma_1 \otimes \sigma_2)) \end{aligned}$$

$$\text{E-Prod}\ \frac{(c_0, st_0) \Downarrow (st_0') \qquad (c_1, st_1) \Downarrow (st_1')}{(c_0 \times c_1, st_0 \otimes st_1) \Downarrow (st_0' \otimes st_1')}$$

A more typical sequencing rule can be derived from Part and Split:

$$\textsc{Seq}\ \frac{c_0\ \mathsf{part}\ c_1 \cdot c_2 \qquad \Gamma \vdash \{P\}\ c_1\ \{R\} \qquad \Gamma \vdash \{R\}\ c_2\ \{Q\}}{\Gamma \vdash \{P\}\ c_0\ \{Q\}}$$