The assertion that $b \in \{0, 1\}$ is invariant is actually equivalent to our specification of the one-bit clock, since it implies that the only possible changes to b are from 0 to 1 and from 1 to 0. This is not obvious, since the invariant allows steps that don't change the value of b while the next-state relation does not. If you follow the TLA$^+$ track, you will learn why our specification also allows steps that don't change b. This is not important for the PlusCal track.

It is true that the specification of a clock with more than two values (for example, a three-valued clock that allows b to change only from 0 to 1, from 1 to 2, and from 2 to 0) is not equivalent to any assertion of invariance.

CLOSE