Counterexample Handling

f produces a 1 if number of a's and b's are both even, otherwise 0.

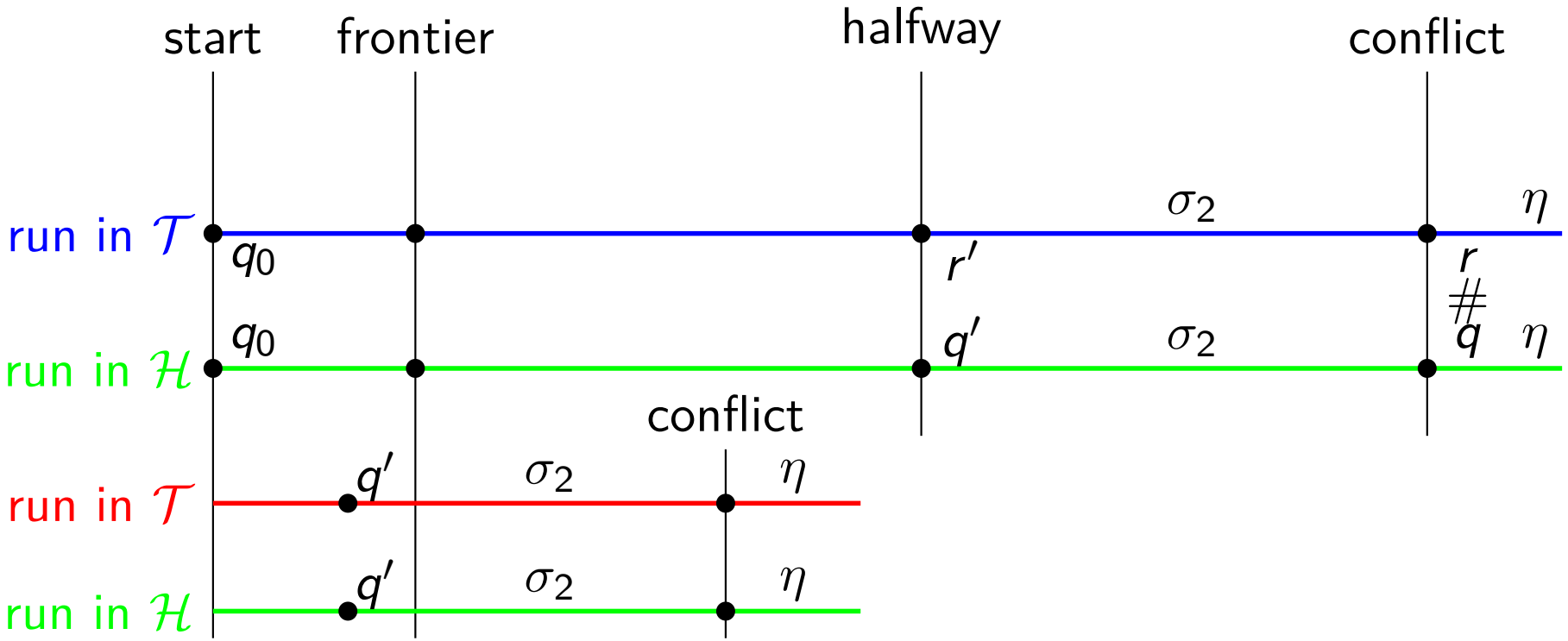
Two a-transition to states which differ on suffix a: add suffix aa

	a	b	aa	"colour"
$\rightarrow \epsilon$	0	0		
$\rightarrow$ a	1	0		a/0
$\rightarrow$ b	0	1		
$\rightarrow$ ab	0	0		
$\rightarrow$ aba	0	1		a/0
aa	0	0		
ba	0	0		
bb	0	0		

Angluin's L^* Algorithm

1. Maintain a set $\mathcal{U}$ of (marked) prefixes, initially $\mathcal{U} = \{\epsilon\}$
2. Maintain a set $\mathcal{V}$ of suffixes, initially $\mathcal{V} = I$
3. Maintain an observation table with rows $\mathcal{U} \cup \mathcal{U}I$ and columns $\mathcal{V}$
4. Fill the table using output queries
5. Table is closed when every row from $\mathcal{U}I$ is also a row from $\mathcal{U}$; if table is not closed extend $\mathcal{U}$ and go to step 4
6. Table is consistent if whenever rows $u, v \in \mathcal{U}$ are the same, rows ui and vi are also the same, for all $i \in I$; if table is not consistent extend $\mathcal{V}$ and go to step 4
7. When table is both closed and consistent construct hypothesis and perform equivalence query
8. If reply is "no" add all prefixes of counterexample to $\mathcal{U}$ and go to step 4

Counterexample Processing



Key idea: perform output query access$(q')\sigma_2\eta$
If outputs for $\sigma_2\eta$ from r' and q' are different in $\mathcal{T}$ then $r'\#q'$
Else access$(q')\sigma_2$ leads to a conflict!