To establish CNESS-causation requires having a look at the counterfactual setting $(M_{A_1 \leftarrow 0}, \vec{u})$. In this setting we get that $A_1 = 0$, $A_2 = 1$, $BH_1 = 0$, and thus $BH_2 = 1$ (as well as $V = 1$). (Informally: if $Assassin_1$ had not shot, then $Assassin_2$'s bullet would have hit and killed Victim.) Here $A_1 = 0$ directly NESS-causes $BH_1 = 0$, $BH_1 = 0$ directly NESS-causes $BH_2 = 1$ (since it forms a sufficient set together with $A_2 = 1$ and $A_2 = 1$ does not suffice on its own), and $BH_2 = 1$ directly NESS-causes $V = 1$. Therefore $A_1 = 0$ NESS-causes $V_1 = 1$ along $p^* = \{A_1, BH_1, BH_2, V\}$. (Take note of this surprising finding. We come back to it in Example 3.) Since $p^* \notin p$, we get that $A_1 = 1$ CNESS-causes $V = 1$ (whereas $A_1 = 0$ does not CNESS-cause $V = 1$ in the counterfactual setting, since $p \subseteq p^*$).

To see that $A_1 = 1$ HP-causes $V = 1$, it suffices to note that $(M, \vec{u}) \models BH_2 = 0$ and $(M, \vec{u}) \models [A_1 \leftarrow 0, BH_2 \leftarrow 0]V = 0$. Lastly, I leave it to the reader to verify that $A_2 = 1$ is not an HP-cause of $V = 1$, and nor is it a direct NESS-cause of anything. Because of the latter, $A_2 = 1$ is not a NESS-cause or a CNESS-cause of anything either.

Modifying the BvH definition so that it uses NESS-causation instead of direct NESS-causation is not a solution, for the NESS definition itself is problematic, as the following example shows. (In the appendix I discuss one more example, a so-called "Frankfurt-case", to show that BvH's reliance on strategies as opposed to events forms another source of problems.)

Example 3. *We revisit the counterfactual setting of Example 2 in which $Assassin_1$ does not shoot, so that Victim is killed by $Assassin_2$'s shot.*

We already established for this scenario that $A_1 = 0$ NESS-causes $V = 1$. Thus if we use the NESS definition, we get the absurd result that *$Assassin_1$ failing to shoot causes Victim to die*. If we then supplement the example so that also BvH's **Epistemic Condition** is fulfilled, we get that $Assassin_1$ comes out as being responsible for Victim's death. (Imagine, for instance, that they mistakenly believe to be holding a flare gun that could sound a warning shot so that Victim ducks for cover to avoid $Assassin_2$'s bullet.) We already established that $A_1 = 0$ does not CNESS-cause $V = 1$, the reader may verify that the same holds for the HP-definition.

This leaves CNESS-causation and HP-causation as candidates for the **Causal Condition**. I use Halpern & Pearl's own example to argue against HP-causation [15].

Example 4 (**Loader**). *"Suppose that a prisoner dies either if A loads B's gun and B shoots, or if C loads and shoots his gun. Taking D to represent the prisoner's death and making the obvious assumptions about the meaning of the variables, we have that $D = 1$ iff $(A = 1 \land B = 1) \lor C = 1$. Suppose that in the actual context $\vec{u}$, A loads B's gun, B does not shoot, but C does load and shoot his gun, so that the prisoner dies. Clearly $C = 1$ is a cause of $D = 1$. We would not want to say that $A = 1$ is a cause of $D = 1$,* given that B did not shoot (i.e., given that $B = 0$)." *[emphasis added]*

I agree with Halpern and Pearl. A fortiori, A is not responsible for the prisoner's death, even if A only loaded the gun because he was convinced that B would shoot. Now consider the following variant. In the original example, C's shot is determined directly by the context. Imagine we add a little twist, so that C would only fire his gun if B did not, i.e., the equation for C is $C = \neg B$. The above reasoning regarding A still applies, and therefore I believe it is a mistake to all of a sudden consider $A = 1$ a cause of $D = 1$. Yet $A = 1$ now is an HP-cause of $D = 1$ (as it appears in the HP-cause $A = 1 \land B = 0$), and thus A would be considered responsible for the prisoner's death. The CNESS definition avoids this result (as does the NESS definition): the only candidate sufficient set for $D = 1$ of which $A = 1$ could be a necessary part, is $\{A = 1, B = 1\}$. So the mere fact that $B = 0$ in both versions of the example implies that $A = 1$ is not a NESS cause of $D = 1$ in either.

I leave a second counterexample to the HP definition for the appendix and refer the reader to [1] for a detailed critical examination of the HP definition. The alternative definition I there presented is in fact very similar to my CNESS definition, although the precise relation is the subject of further investigation.[5] This leads me to suggest adopting the CNESS definition for the **Causal Condition**.

5 The Epistemic Condition

Recall that the difference between HK and BvH's **Epistemic Conditions** lies in whether an action minimizes the probability of *the outcome occurring* (HK) or of *it causing the outcome* (BvH). Given

[5] I tentatively conjecture that the CNESS definition implies my other definition, and not vice versa.