that one cannot cause an outcome unless the outcome actually occurs, and that vice versa, in many cases the best way to make sure that an outcome occurs is by causing it, both of these conditions often go hand in hand. However, as the following example illustrates, they do not always do so, and when they do not the appeal of HK's condition is stronger.

Example 5. Bombing *A bomb (B) is connected to three detonators (D_1, D_2, and D_3) by two switches (S_1 and S_2). D_1 is functional if only S_1 is on, D_2 is functional if only S_2 is on, and D_3 is functional whenever S_1 is on. The equations are thus as follows: $B = D_1 \lor D_2 \lor D_3$, $D_1 = S_1 \land \neg S_2$, $D_2 = S_2 \land \neg S_1$, and $D_3 = S_1$. $Assassin_2$ (reasonably) assigns a probability of* 0.6 *to $Assassin_1$ turning on S_1. He decides to turn on S_2, thereby* guaranteeing *that the bomb will explode. $Assassin_1$ decides not to turn on S_1, so that the bomb explodes due to the functioning of D_2.*

Here we certainly would want to say that $Assassin_2$ is responsible for the explosion, and the reason for this seems to be precisely that he knowingly increased the probability of the bomb going off (from 0.6 if $S_2 = 0$ to 1 now that $S_2 = 1$). There is also no doubt that $Assassin_2$'s action caused the explosion: if he had turned S_2 off, the bomb would not have exploded.

However, $Assassin_2$ did act so as to minimize the probability that his act would cause the explosion, regardless of whether one chooses NESS-, HP-, or CNESS-causation. Concretely, for all three definitions of causation, $Assassin_2$'s probability that $S_2 = 1$ would cause $B = 1$ is 0.4, whereas his probability that $S_2 = 0$ would cause $B = 1$ is 0.6. (The details are worked out in the appendix.)

Note that in case $S_1 = 1$, then $S_2 = 0$ would result in the outcome being overdetermined, and thus although the latter action would also be a cause of the outcome, it does nothing to contribute to the probability of the outcome occurring. This is what explains why the two conditions can come apart, and why I take the general moral of this story to be that increasing the probability of the outcome trumps increasing the probability of causing the outcome.

However, it does not follow that the probability of causation is irrelevant, but only that it should fulfill a secondary role. Consider again Example 2, and assume that $Assassin_1$ believes that $Assassin_2$ will shoot, and thus believes that Victim is facing certain death. (If that sounds too unrealistic, imagine $Assassin_1$ is one of ten members of a highly trained firing squad that is executing Victim.) Thus the action of $Assassin_1$ had no effect on the probability of the outcome, and would thus not be responsible for Victim's death according to HK's definition. If $Assassin_2$ has a similar belief, then we end up with nobody being responsible. I take this to be an unacceptable result. (Fischer & Ravizza reach the same conclusion when likewise discussing a case (Missile 2) in which an agent knows that the outcome will ensue no matter what they do, and yet the agent is still responsible for the outcome by choosing to cause it [12, p. 102].)

The lesson I draw from this is that if one knowingly has the opportunity to reduce the probability of causation *without thereby increasing the probability of the outcome*, then an agent is responsible if she fails to do so. Therefore I propose the following definition of moral responsibility.

Definition 10 (Responsibility). *An agent who performs $A = a$ is responsible for $O = o$ w.r.t. a responsibility setting $(M, \vec{u}, \mathcal{E})$ if:*

- **(Causal Condition)** *$A = a$ CNESS-causes $O = o$ w.r.t. $(M, \vec{u})$.*
- **(Epistemic Condition)** *There exists $a' \in \mathcal{R}(A)$ so that one of the following holds:*
  1. $\Pr(O = o | [A \leftarrow a]) > \Pr(O = o | [A \leftarrow a'])$
  2. $\Pr(O = o | [A \leftarrow a]) = \Pr(O = o | [A \leftarrow a'])$ *and*
     $\Pr(A = a \text{ CNESS-causes } O = o) > \Pr(A = a' \text{ CNESS-causes } O = o)$.

6 Degree of Responsibility

My binary definition of responsibility can be complemented with a definition of the *degree of responsibility* in order to capture the widely shared sense that responsibility (as well as blame and praise) is a graded notion. Both BvH's and HK's **Epistemic Conditions** naturally suggest such a definition, and so does my combined condition.

The obvious graded counterpart of HK's condition is to simply look at the *causal effect* [22], which in the context of causal strength is referred to as the *Eells measure of causal strength* of $A = a$ relative