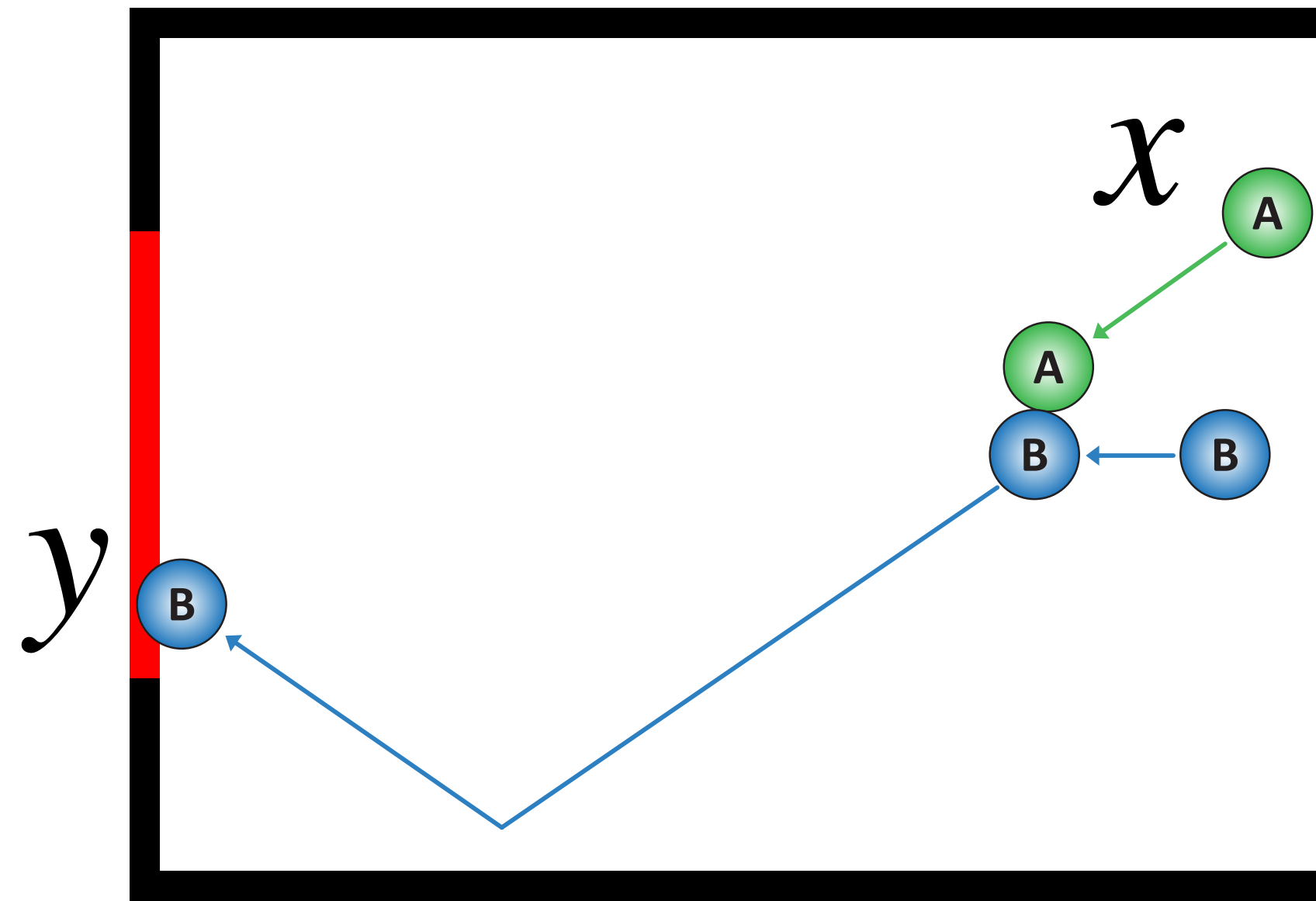
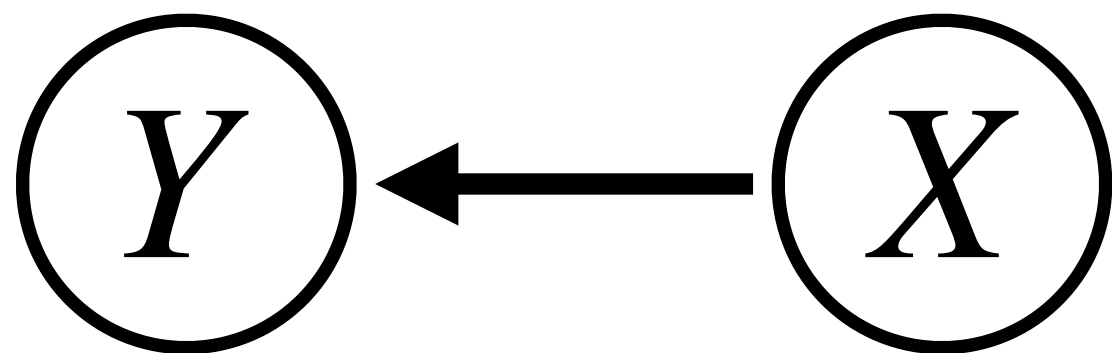


(a) one-cause scenario



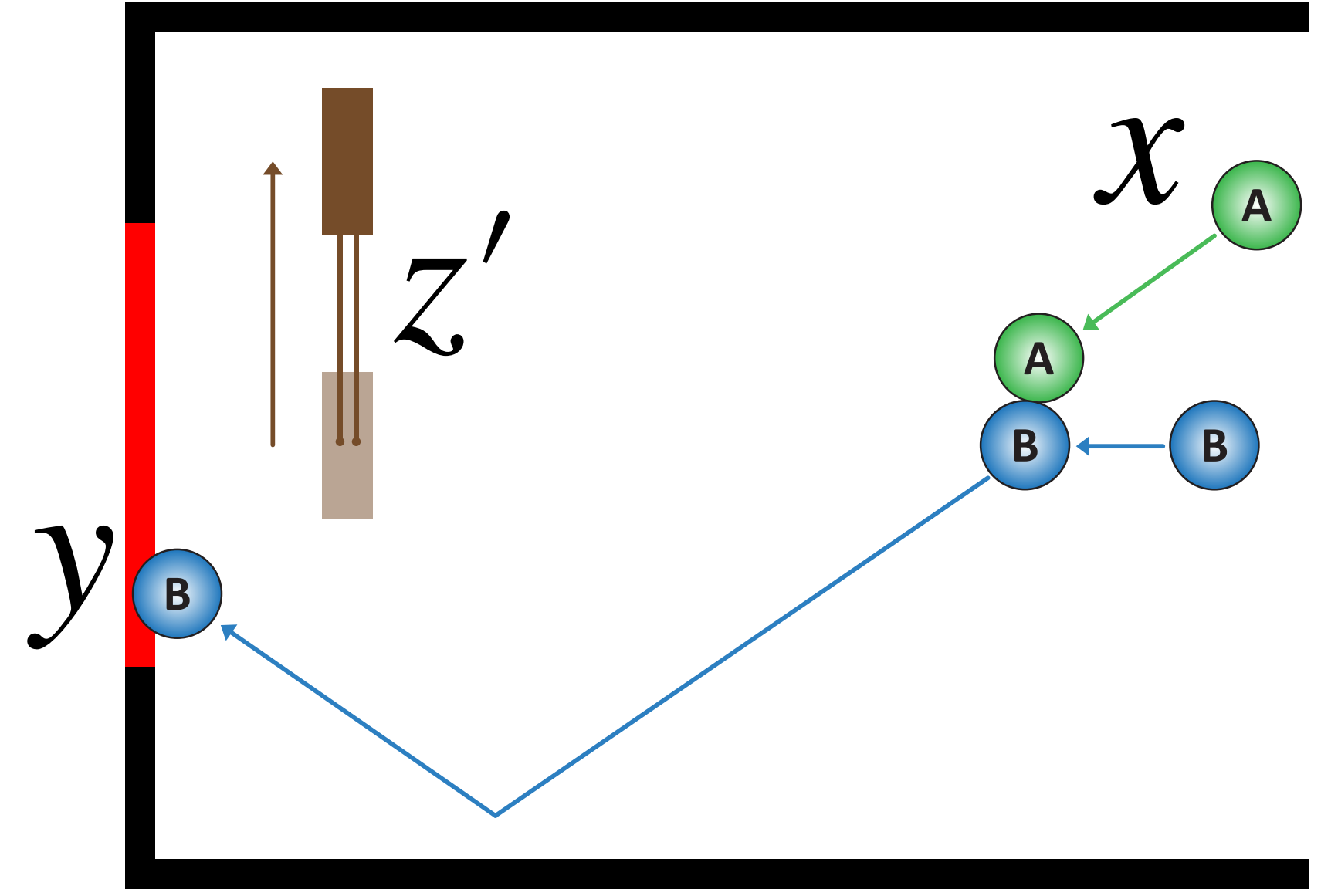
$$Y = X$$



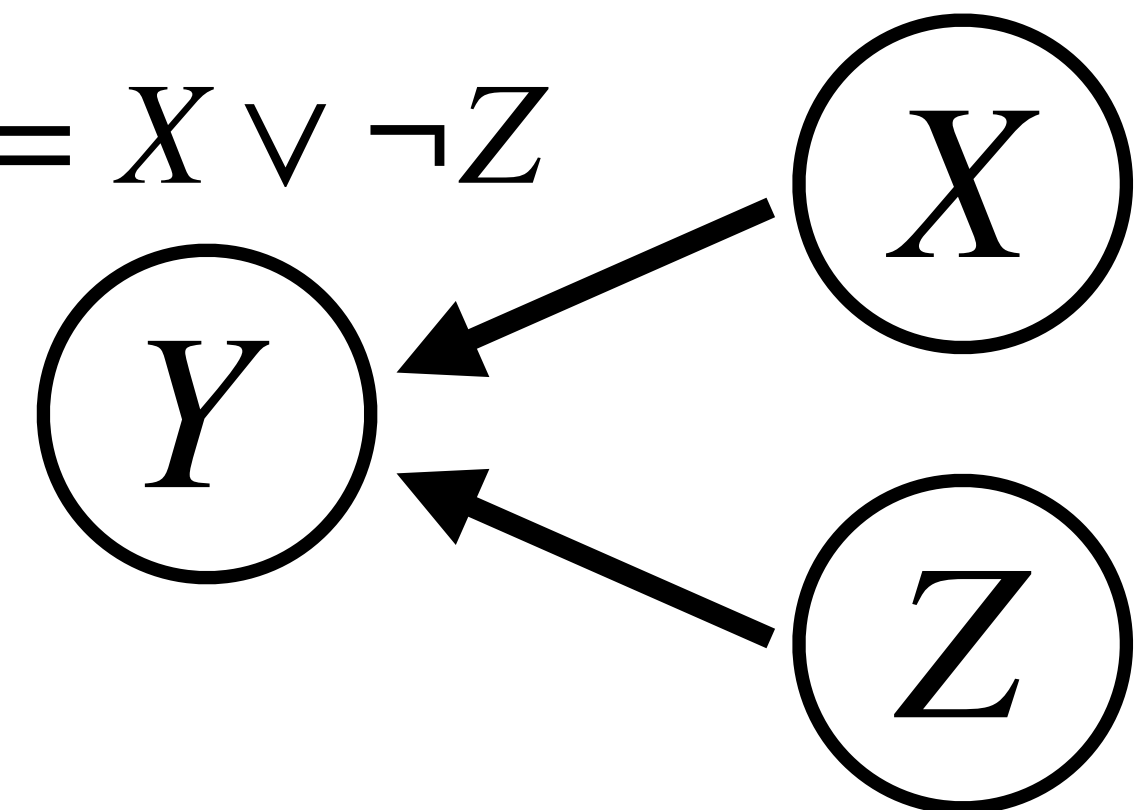
hypothetical = counterfactual

$$p(y \mid \mathbf{do}(x')) = p(y_{x'} \mid x, y)$$

(b) two-cause scenario



$$Y = X \vee \neg Z$$



hypothetical \neq counterfactual

$$p(y \mid \mathbf{do}(x')) \neq p(y_{x'} \mid x, y)$$