Extra Credit #A

Due: January 19, 2024 **Points:** 100

Prove or give a counterexample:
The predicate *can•share*$(\alpha, \mathbf{x}, \mathbf{y}, G_0)$ is true if and only if there is an edge from $\mathbf{x}$ to $\mathbf{y}$ in G_0 labeled α, or if the following hold simultaneously.

(a) There is a vertex $\mathbf{s}$ with an $\mathbf{s}$-to-$\mathbf{y}$ edge labeled α.

(b) There is a subject vertex $\mathbf{x}'$ such that $\mathbf{x}' = \mathbf{x}$ or $\mathbf{x}'$ initially spans to $\mathbf{x}$.

(c) There is a subject vertex $\mathbf{s}'$ such that $\mathbf{s}' = \mathbf{s}$ or $\mathbf{s}'$ terminally spans to $\mathbf{s}$.

(d) There is a sequence of subjects $\mathbf{x}_1, \ldots, \mathbf{x}_n$ with $\mathbf{x}_1 = \mathbf{x}'$, $\mathbf{x}_n = \mathbf{s}'$, and $\mathbf{x}_i$ and $\mathbf{x}_{i+1}$ $(1 \leq i < n)$ being connected by an edge labeled t, an edge labeled g, or a bridge.