

Non-exploitable poem

Imagine that we ask a baker to bake
n identical copies of a metaphorical cake.
On each day we play a cut-and-choose game
The cutter can be different but the chooser is the same.
On the first day the cutter must act with civility;
She knows nothing about the chooser's utility.
So the cutter's options are really quite tame:
She must render 2 pieces she values the same.
And once the cutter is done with her slicing,
The chooser keeps the piece that she finds more enticing.
On day 2, well the cutter could be anyone,
And she knows everything that occurred on day 1.
What if the new cutter's utility is precisely aligned
With the piece the chooser on day 1 left behind?
Hurrah, thinks the cutter, 'tis a wonderful day,
I'll just cut this new cake in the exact same way.
And knowing what the chooser's choice will be,
The cutter extracts her entire utility.
I will end with a question: is this unavoidable?
Or can we design protocols that are not exploitable?