Forward or Reverse? Explanations

These five movie clips demonstrate the "arrow of time". Chicks hatch out of eggs—they don't return into them. Babies grow larger, not smaller. If we reverse the "arrow", events look wrong. Some events look the same forward and backward, however. Let's consider the five clips. **{My favorite thing about this puzzler is the amazing observations many folks made that I had not considered. Awesome thinking!!}**

1. **Candle:** Forward. Obviously no easy way to have burning candle grow.

2. **Bouncing Steelie**: Reversed. It keeps bouncing higher. As objects bounce they lose energy (friction with air and internal deformation when hit bouncing surface), which reduces each bounce height.

3. **Walkin' Along**: Either or reversed. Walking forward or backward is not significantly different. (Actually, this has been reversed! I was walking forward.) {As I discussed this one with viewers, some really interesting comments have come out. One viewer noted that walking is less reversible than I claim. One lifts toe more forward than backward. Also, I may not have walked in such a natural way since I was so conscious of how I moved. Another said he slowed my motion way down and noticed that the movement of the leaves when my head hits them shows I reversed the movie!}

4. **Color-Changing Coke Can:** Reversed. The "ice cubes" turn blue when the can is cold enough to enjoy. In the video, they begin white and turn blue. I noted it was filmed on my kitchen table. Although it would be possible on a cold day to open windows and let the room cool way down, it is much more likely that it was taken out of the fridge and slowly warmed up. {One viewer pointed out ice cubes could have been added that cooled the can down, allowing it to be forward. Again, great reflection!}

5. **Floating Balloons:** Reversed or either. {As I watch the video over, I realize I didn't do the best job of selecting a good section of the movie! Here's what should have been more visible:} When part of the vent is covered by one's hand, the air that flows out speeds up and pushes the balloons higher (much like sticking one's thumb in the stream of water flowing out of a garden hose). The hand really did cover the vent and the balloon rose. I reversed this so the viewer is supposed to see the balloon dropping to the hand.

I acknowledge all reasonable attempts, not simply right answers. Keep on thinking!