

Preface

Synfig's bone system could allow a bone to change its parent during animation in certain situations.

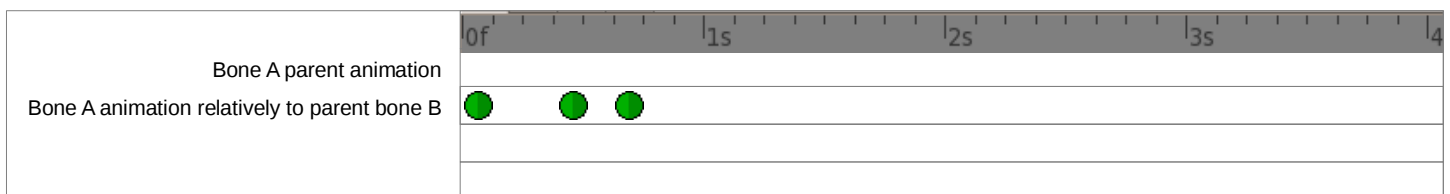
The problem is what the bone position-angle-size is relative to it's parent. So when at the moment of changing parent the bone should switch it's coordinates to the coordinate system of other bone to preserve its position on the screen.

OK, how synfig could handle this?

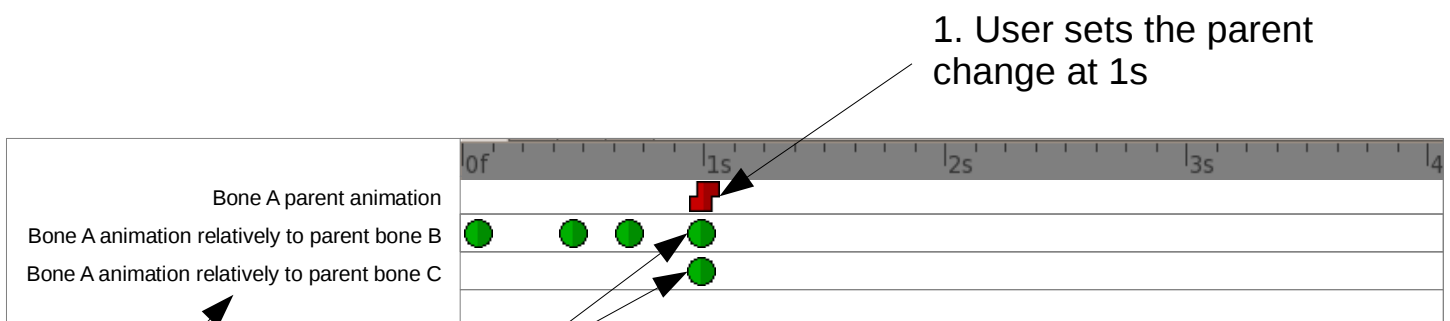
Proposal

The idea is to keep separate animation tracks for each parent bone and transparently switch between them.

Imagine what some bone A parented to bone B and animated:



What synfig does when bone A changes its parent from bone B to bone C at 1s:

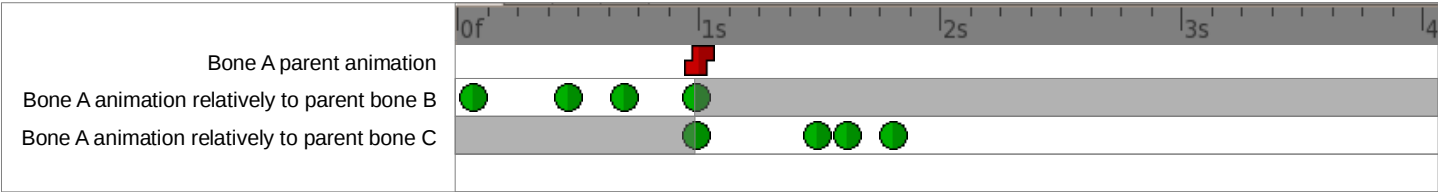


2. Synfig adds the second, «virtual» track to track further bone movement relatively to new parent bone C.

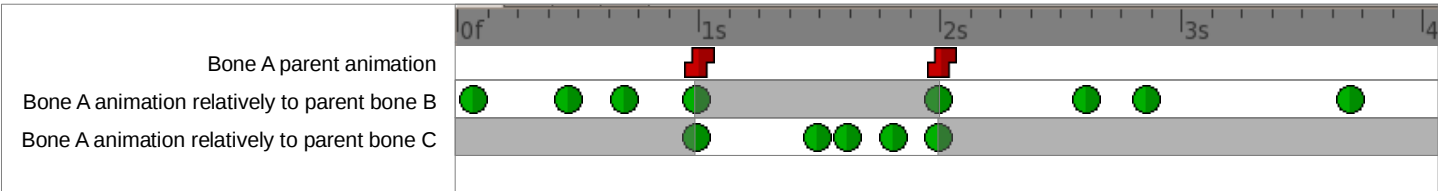
3. Synfig sets the waypoints at the moment when switch was done for both tracks to ensure what bone position is fixated during switch. The coordinates for both green waypoints is different, but they correspond to the same position relatively to screen.

4. Synfig links all 3 waypoints created at 1s to ensure what moving one of them will move others.

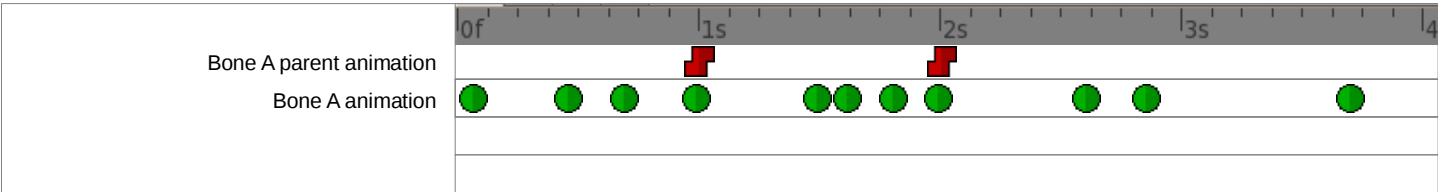
Then Synfig «hides» the rest of bone B track from user view and uses animation track relative to bone C for further animation:



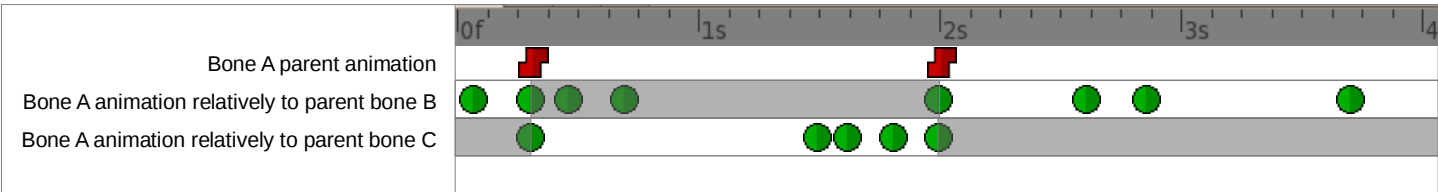
If user switches the parent of bone A back to bone B, the porcess will be repeated:



Synfig masks the «unused» parts of the tracks and combines them into one, so, from the user's view the image above will look like this:



If user will move first switch waypoint from 1s to other time, then synfig automatically move corresponding linked waypoints and we will get:



Notice the «grayed» waypoints on track of bone B – they will be excluded from animation (but will be preserved if user will move switch waypoint back):

