How the Heck Do You Change Your Animation after You've Already Started Polishing the Shot?

By Shawn Kelly

This tip is huge. Honestly. At least for me, and my workflow, it's massive. The concept is simple, but it's truly essential. I have a feeling it will be new to many of the beginners out there, and may even be new to those of you who have already been animating for a bit. So raise your hand out there if this has happened to you: You've been working hard on a shot and are nearly finished with it. Your supervisor/director/client/boss/friend/mom bought off on your original ideas, loved your blocking, and you dove in head first to do all the fun little polishing bits. You've been adding all the little buttons and bows, dotting your i's and crossing your t's, and any number of other tired clichés. The shot is looking pretty great (finally!), and you're looking forward to putting this one to bed and starting on something new. And then it happens.

Oh yeah, you guys totally know where this is headed, don't you? I can feel you cringing from here. You're minutes away from doing your final render of your masterpiece, when along comes your supervisor/director/boss/friend/mom with the most dreaded five word sentence in the animator's vocabulary: "I have a new idea." I know. Brutal, isn't it? We've all been there. I'd be willing to bet that some of you are there right now, in fact. Unfortunately, in a client-based industry such as this, the collaborative nature of it is a two-edged sword -- it offers the excitement of constant fresh ideas when you are beginning a shot, but that sword can just as easily swing back and lop the head off of the original idea you've so invested yourself in. In short, this situation just isn't all that uncommon. Rare is the director (or supervisor, or client, or boss, or friend, or mom) who has the detailed imagination to truly envision the way an idea will truly look in a shot.

Many of the people you will work with in this industry simply will not know if an idea or movement or acting decision will truly work until they actually *SEE* it animated in your shot. Most will be able to tell from your blocking (thankfully), but every once in a while, they'll need to see it fully fleshed out. Just as common are the folks who will simply change their minds.

Luckily, if you are working in a studio, it is simply too expensive for the clients to constantly change their minds, or at least the looming deadlines will eventually force them to make a decision (long after you'd like them to, of course), but the chronic mind-changers are – sadly – a thriving race of people you *will* have to face at one point or another. So, what do you do? I mean, what are you supposed to do when you get these change requests and your nice and neat (hopefully) blocking keys are thing of the past, and you've already started offsetting all kinds of stuff, refining your arcs, tweaking this and that? Well, if it's a massive overall change, sometimes you'll have to bite the bullet and (ugh) start over. If it's a medium-sized change, then it could go either way, but a lot of the time it's actually faster to just start over than to try to cram a pretty big overall idea change into a shot. Obviously this depends a lot on what the shot and change are. But usually, it will be a smaller thing. Something you *could* fit into your current animation. A timing issue, maybe, or a new movement in the middle of the shot. This is the case I'm going to talk about today. Your curves are already exactly the way you want them, but in the graph editor they look like a plate of angel hair pasta. They sit there in a tangled mass, leering at you. Impenetrable, daring you to try to decipher their meaning. Well, guess what? It's actually very easy to deal with this if you have a plan of attack. So, what do you do? TIP: Bring It Back To Blocking! Sounds hard, right? It isn't! Nothing could be easier. All you do is throw on your hard hat and start building what I call a "Construction Zone." Basically, you need to wall off the area that you're going to work in before you bring in the bulldozers

and tractors and start trashing the joint. So, let's do this. Let's talk about two different situations you might deal with in the following shot that you have just animated

SCENARIO ONE: THE SHOT:

A character walks into a room, sees on the television that his favorite hockey team just scored, and runs to the TV and gives it a big hug.

THE DIRECTION: This is looking really great. I love how he walks in and his first reaction to seeing the TV, and I *love* the way he hugs the TV, but instead of running to the TV, I'd really like him to jump excitedly into the air and spin all the way around first. Yikes, right? This won't be easy, but the first thing you need to do *is* very easy, and that's to build your construction zone. Let's say that your curves currently look like this in your graph editor:
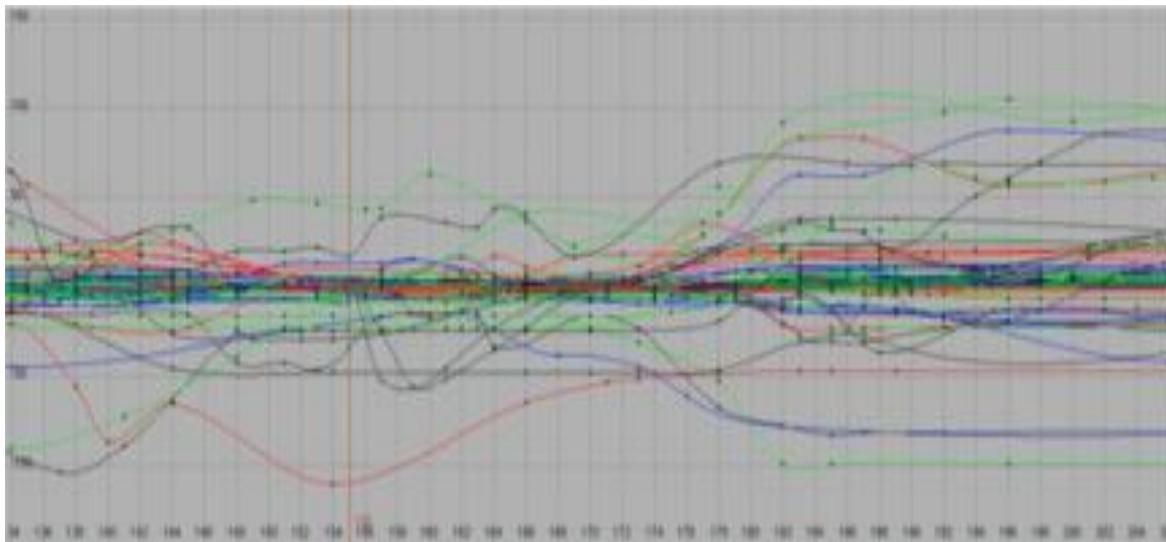

OK, not the "cleanest" keys in the world, but a lot of the time, your curves might end up looking like this for a variety of reasons. I try to think of my key poses as "drawings," and tend to keep my keys all on the same frame so that one pose/drawing won't ever get messed up, but after I'm out of my blocking phase, and all of my timing and ideas are nailed down, then I stop worrying

about that and shift my focus to just making the shot as dynamic and clear as I can. Oh, I just thought of a whole other tip! Uh oh, buckle up for a patented "Tips & Tricks Tangent"....

This will be REALLY quick. Check out the selected curves/keys below. See the crazy mess of tangents?
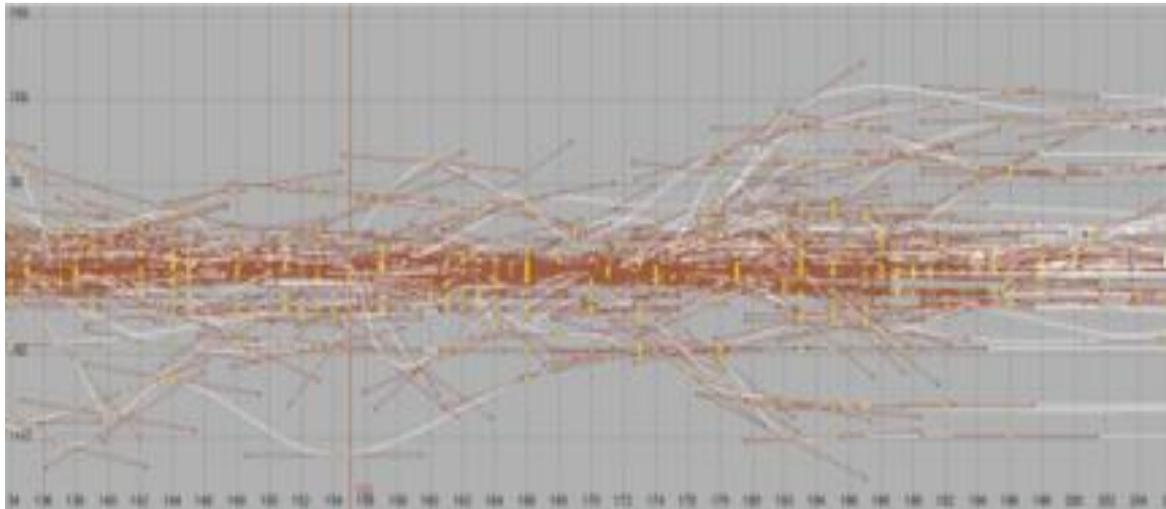

I don't know about you, but I can't even look at that. It's too confusing to see where my keys are. So my "mini-tip" is to make a hotkey in Maya (or whatever you use) that will turn your key tangents off. Like so:
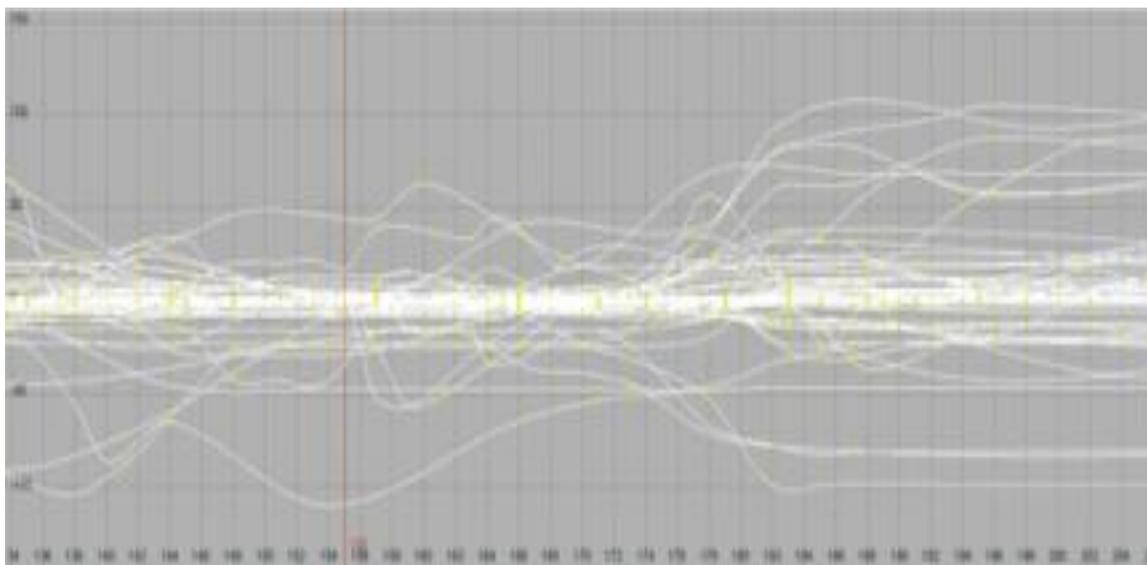
Ahhhh, isn't that better? So much easier to look at. Creating a hotkey to flip back and forth is a lifesaver when you are working in the graph editor...

OK, back to our regularly scheduled article: Let's say that frames 149-175 represent the bit where our guy runs to the television. The part we need to ditch, and replace with a mid-air excited jump/spin.
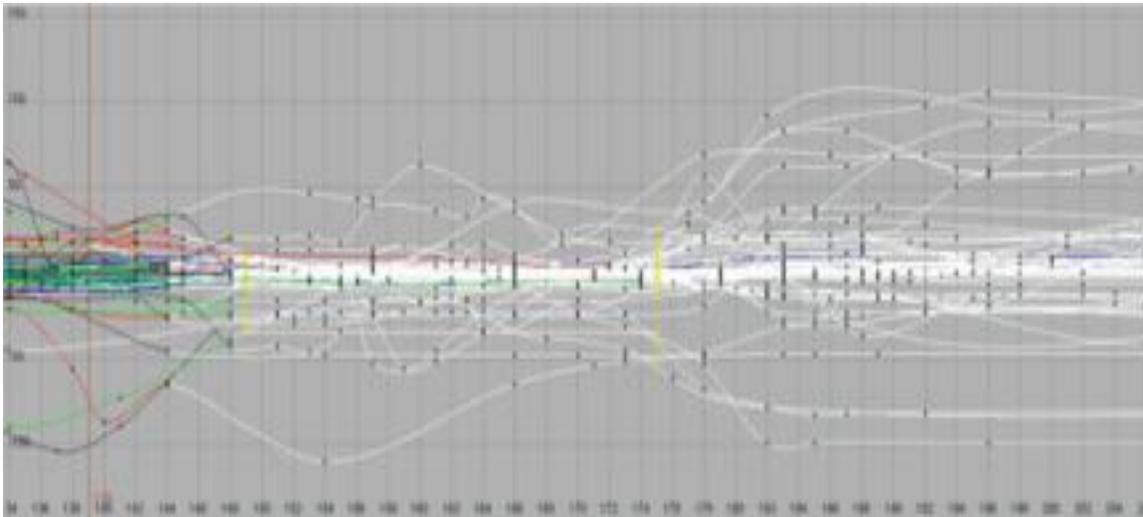
The first thing you'll notice about the image above is that I've saved a key on EVERYTHING in my scene (the guy, the props, anything he interacts with, maybe even the camera) on frames 149 and 175 (You'll notice they are selected in the above image).

This is the first step to walling off your construction zone. With these keys in place, you can blow away everything in between them with a fair degree of safety. The only time this would screw you up would be if you didn't have any keys saved within a few frames of these frames, in which case I'd guess there's a decent chance you're letting the computer do too much of your in-between work...

Anyway, now you can blow away the stuff in the middle:
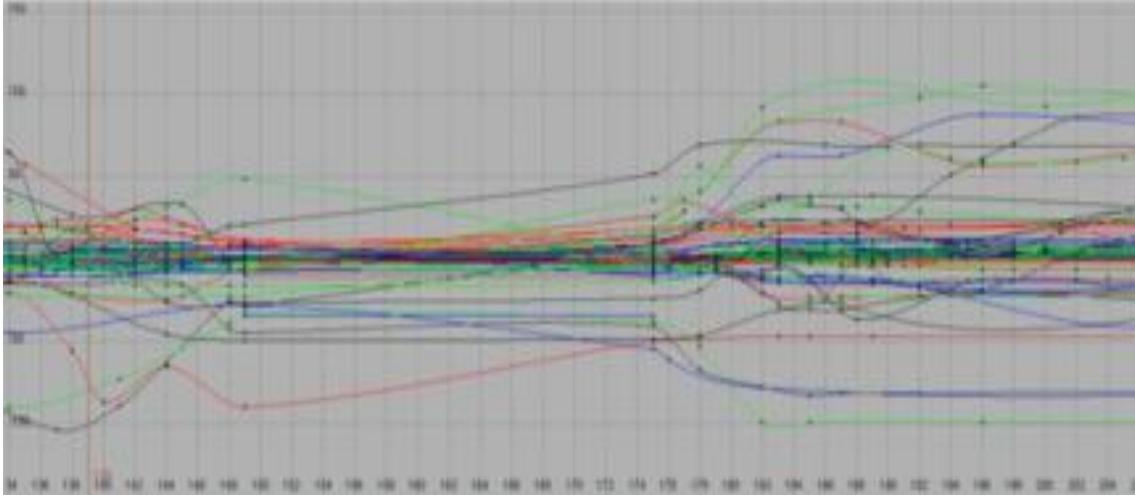
Now, sometimes you'll need to do a little minor clean-up, but in theory, the first 149 frames should look exactly the same as they did a moment ago, as should everything after frame 175.

This is a good start, and you've just given yourself a chunk of space to block in a jump/spin. However, you have this problem of your character being in a constant state of motion as you are trying to animate him. He'll slowly be morphing into the pose at frame 175, right?

Well, there are probably a few ways to work around this problem. But the way I like best is to simply copy the pose from frame 149 to the frame just before my construction zone wall, which in this case, would be frame 174:

.
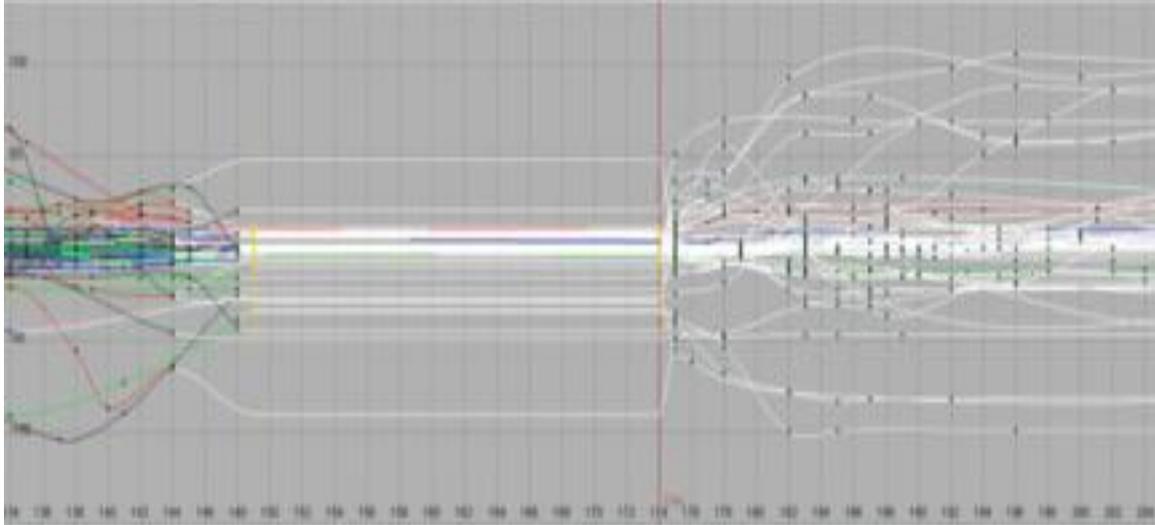
Ta-daa! Now you have a blank canvas upon which to paint your new and (hopefully) improved masterpiece. All I did was go to frame 149, and hold down my middle mouse button as I scrolled to frame 174, and then I simply saved a key on everything. This is a great and easy way to copy/paste your poses as you work. As you save each new pose of the jump spin you are now animating, you can copy/paste it to frame 174, giving you a constantly updated "flattened area" to work in.

Obviously, you'll eventually have to replace the key at frame 174 (or just delete it) in order to flow smoothly into 175 and all the following original animation.

**SCENARIO TWO:**

THE SHOT: Same shot

THE DIRECTION: The shot's looking great, but I really want him to run to TV a lot faster. Like, twice as fast. And have him kiss it a couple times when he gets there. OK, so this is kind of similar, but creates a whole new problem for

you. Now your client or supervisor actually wants you to keep the guy running to the TV, but he wants it to happen faster, *AND* he wants you to add some kissing in there.

Obviously, you can't just blow away everything in between 149 and 175 this time. Well, that's not true. You *can* if you want, but this sounds to me like it'd be silly to have to completely rework that section when you mostly just need to change the timing and add a couple little things in. For this, you'd build your construction zone just like in the first scenario, but instead of just deleting your keys, you need to do something new. You need to clean up your curves.

Basically, all you do is step through your animation and examine it the way you would examine video reference. Look for anytime something important happens, or something changes direction, or it could even be something technical, such as a frame where some constraints turn on or something.

On any frame where anything absolutely essential happens on any important part of the body, save a key. On *EVERYTHING*. If he's running, and his foot picks up off the ground and you like that pose, save a key on every controller on his body:
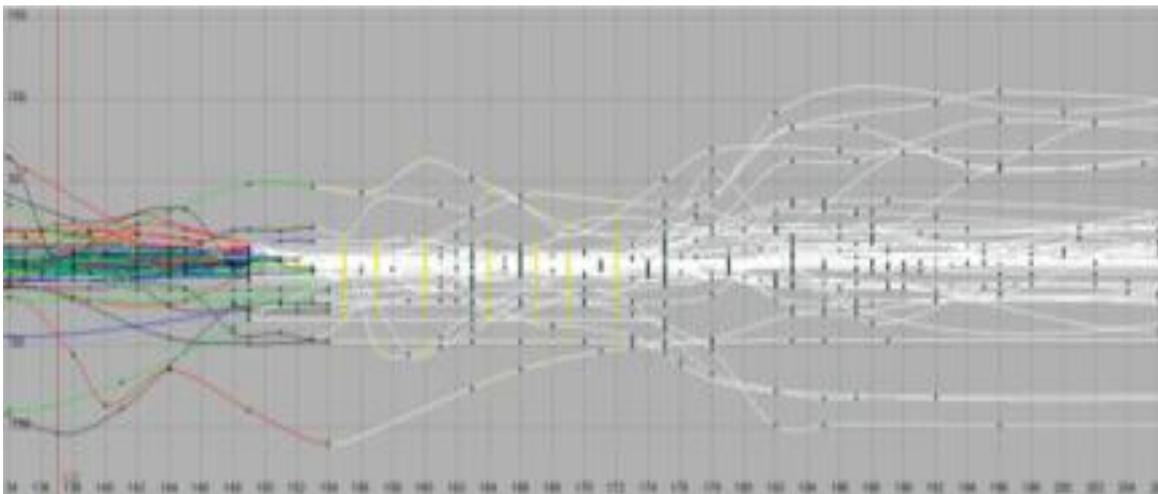
The frames with the yellow keys happened to be the ones I felt were important to keep around. Even though many controllers didn't have any keys saved on them on these frames, I included them anyway. That's a really important part of this process. Next, it's time to delete everything that is in between the keys we just saved, which leaves with this:
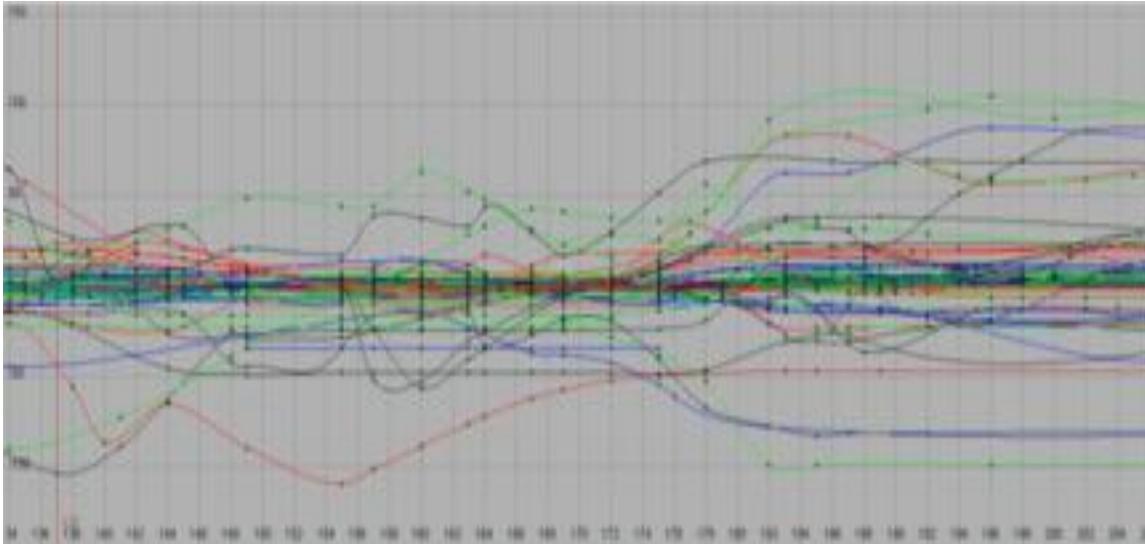

If you play blast this, the animation should look pretty much exactly the same as it did, minus a few minor nuances. If it looks wrong, then you've missed some controllers or missed an important frame you should have kept around.

The point is that we've taken our garbled spaghetti curves and organized them into something we can truly work with! Now it's SO easy to speed up this bit of animation without screwing up your poses. Simply select the first one you've kept, which in this case is frame 155:
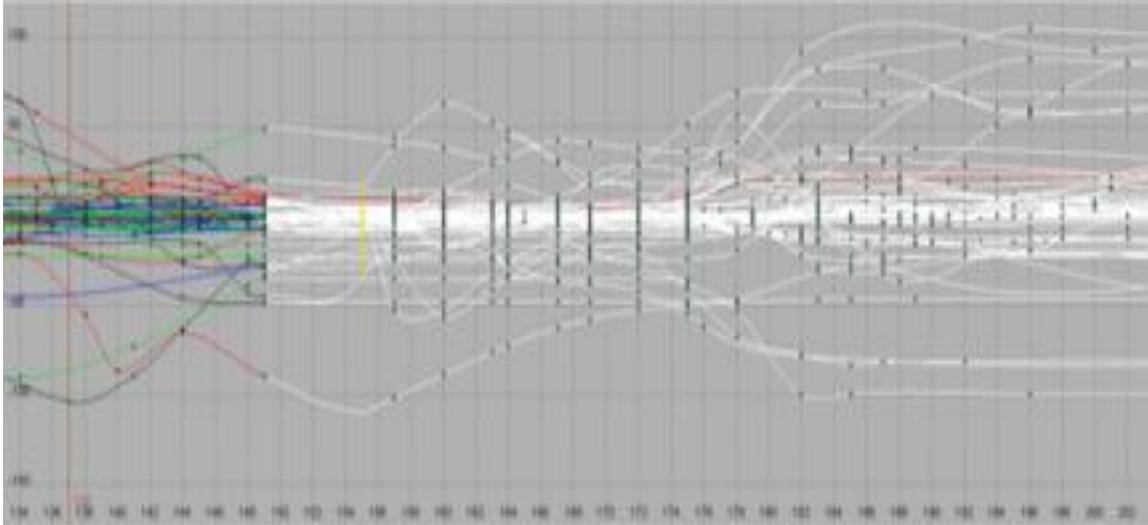
Now zoom waaaaay out in your graph editor, so you can see everything that comes after this key:
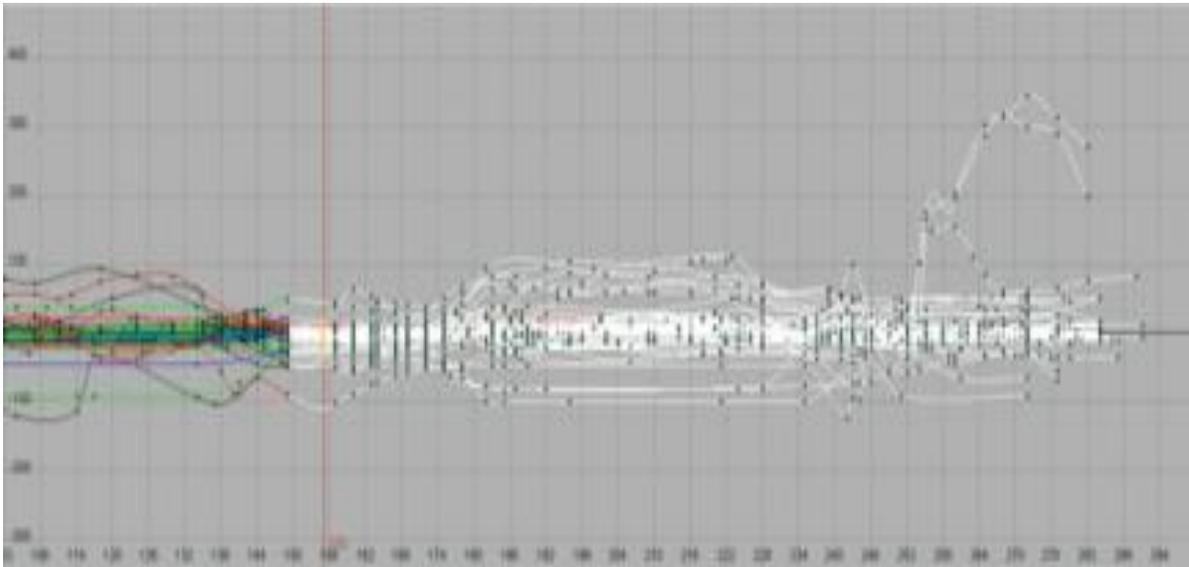
Since you've selected the keys at frame 155, it's still easy to see which key it is that you're working with. You can also put your timeline to frame 155 which gives you that nice red line as a good reference point of where it is you should be worried about. At this point, just make sure you have selected frame 155 and every key that comes after it:
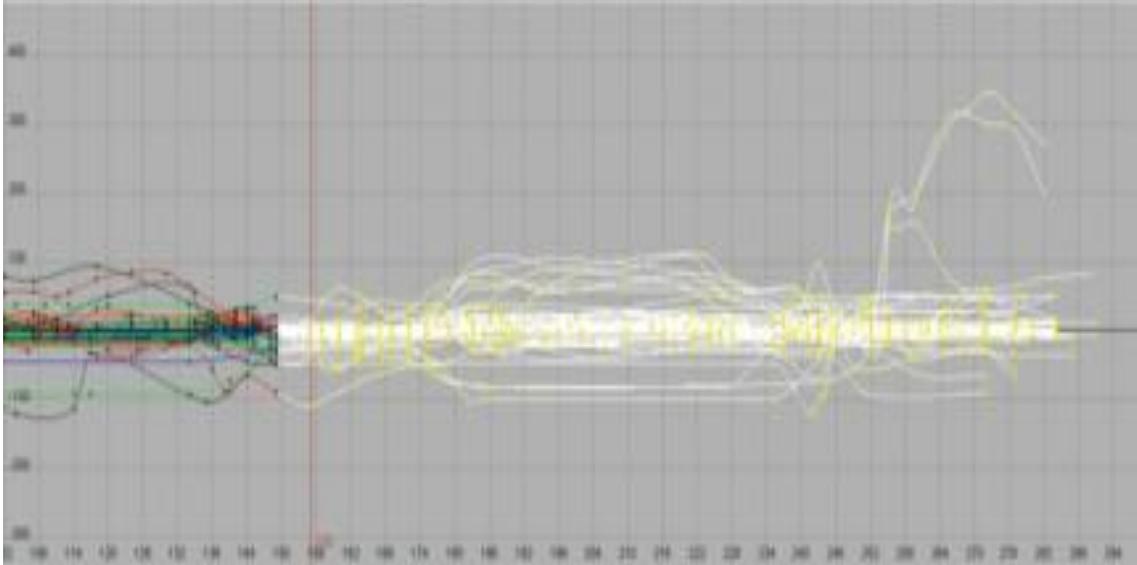
And then just slide everything backward as much as you need to in order to properly speed up the first bit of your run (the part between 149 and 155):
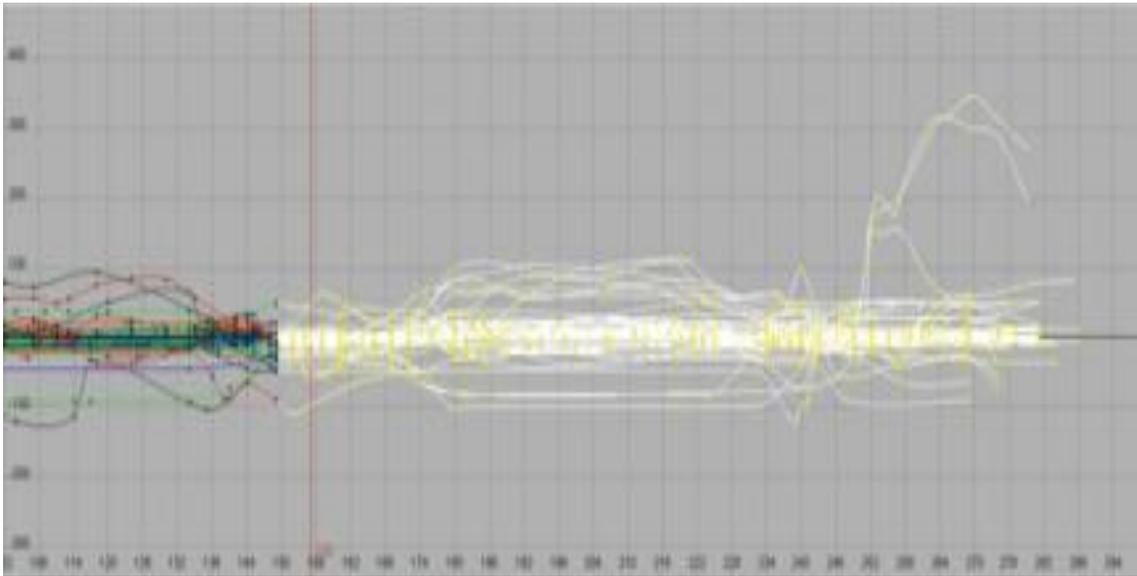
Then you just deselect the keys at 155, which should leave everything selected from the next key onward, and slide that back as much as you need to.

And so on and so forth. Eventually, you'll have a faster run, AND a blank area of keys you can put a kiss into, and eventually hook back up to what was once frame 175, but what now might be 165 or whatever.

Some of you might wonder why I wouldn't just select the run animation and scale the keys in order to speed it up. Honestly, I might try that quickly to just see how it looks, but I just don't have enough manual control in that situation, and more often than not, I won't be satisfied with the results. Aside from the fact that a faster run will probably need extra time easing into the run and out of it at the end (rather than simply scaling it uniformly), the more important thing for me is that a pose that I love that will help the run be clear and strong, or really show his weight or force might end up in between a frame and never properly show up on screen.

Your poses are your babies in animation. You've hopefully put a lot of thought into their creation, so cherish them, and avoid automated stuff that might hide or destroy them. That'd be my advice, anyway.

Tips on Speeding Up Animation Workflow and Animating Faster
By Shawn Kelly
QUESTION: *I was wondering if you had any tips on how to speed up animation workflow, and animating faster in general? In many situations, the faster you have to animate, the less quality you can afford to achieve. But even in the "big budget" movies, there can be stressful crunch times when you have to animate pretty darn fast -- but you can't sacrifice quality either. Since you have so much production experience on big projects that require high quality animation, I was wondering if you've found any time-saving tips, if you ever felt you took a big leap forward in speed, yet managed to produce great work?*
Ten quick tips for speeding up your work:
1. Don't skip the planning process. Seriously, I know a lot of you feel too busy to plan your scene before you open Maya or Max or whatever you're using, but even if you can only dedicate 30 minutes to creating and/or studying some

video reference and writing down some notes, it will help you finish faster. SOME amount of planning will *ALWAYS* speed up your work, no matter what. The best scenes I've ever done, and the quickest that finished, were the shots where I spent the most effort planning before sitting down at the computer.

2. Hot keys are your friend. Any time you find yourself doing anything repetitive in Maya (or whatever animation program you are using), create or find a hotkey for it. I have and use hotkeys for working quickly in the graph editor (hiding/showing tangents, hiding/showing channel curves, etc.), for saving keys, for hiding/showing animation controls on the model, for X-ray mode, to make joints visible or invisible, for scrubbing time in the graph editor, and for instantly creating more workspace when I don't need to see all the menus and channels. Those are just some of the hotkeys I use every day, and boy have they sped my work up.

3. If you have the ability to create or use a GUI that allows you to select your character's animation controls, that can be a big help, especially for working with hands, tails, toes, etc.

4. Don't get too bogged down in changes. If your director wants you to change the middle of your shot, just block it off (construction-zone style, as I wrote about in the newsletter), and create all new keys and breakdowns.

You can really get slowed down if you start trying to make any major changes simply by tweaking the curves you already have in the graph editor. Very often, it's just faster to wall that part of your animation off (so you don't screw up the surrounding bits the Director *does* like), and redo that section from scratch. Cleaner and easier to edit, too.

5. Don't be timid! Push your ideas and go for that dynamic pose. It's much easier/faster to take something too far and then back off on it than it is to slowly push your pose or idea a little bit further, a little bit further, a little bit further, etc. Just go for it and then reign it in if you need to.

6. Use light models if possible. Something that speeds up my work like crazy is the ability to just hit play in Maya and watch my animation play reliably at

24fps without having to do a playblast or render. Use the lowest-res version of your character as possible, at least for your initial blocking.

7. Same Avoid the black hole that is (insert favorite website

here). For me, I have to be careful with sites like Digg, YouTube, Gizmodo, etc. -- these web sites that I really love can suck me in if I'm not careful, and suddenly I've lost an hour of time that I could have spent animating. Discipline yourself to only check your favorite sites when you have to, when you're on a break, or when you're rendering.

8. Same with email. Between ILM, Animation Mentor, my personal email, the blog, and the newsletter, I get hundreds of emails per day. Prioritize and only read the most essential emails until you're on break or finished with your work for the day. For me, I try to only read email at work that is directly related to the show I'm working on, and then try to catch up on the rest before bed. (By the way, if you've emailed me and I haven't emailed back -- I'm really sorry! I'm kind of behind on my email, but I'm trying to catch up and will hopefully get back to you soon!)

9. CPU, RAM, a decent-sized monitor, and graphics card. Don't underestimate the boost you'll get from investing

in the core bits of your computer. Beef up that machine for fast interaction with your character! The quicker you can interact with the character, and the quicker your program will update the frame, the quicker you'll get your animation done. Along those same lines, a larger monitor will give you a lot more screen-space and make it much easier to see your character, saving a lot of "zooming in and out" time...

10. Use the 15-minute rule. If you come up against a technical problem that you can't solve on your own in 15

minutes, give up, and find help. If you're in a studio, ask a peer or pick up the phone and ask tech support.

If you're at home, jump online and start searching through Google or post your question on the forum. In the past, I've wasted half a day trying to solve some problem on my own and it turned out that I could have solved it in 10 minutes if I had just asked someone for help. Update!

11. I just thought of another great tip someone once told me, so I'm adding it to this post! If you're given, or give yourself, a list of changes for a shot, don't do a test render of that shot until you've addressed all those changes. In other words, if you're given 10 things to fix, don't fix one and then re-render. Wait until you've fixed a bunch or all of those 10 things, and THEN do your playblast to see how it's looking. The goal, of course, being to cut down on the time it takes to playblast and analyze the shot.

Hopefully that makes sense. In both cases, it's important to think of your character as one unit rather than a collection of separate controllers. Because you've already started polishing him up, you want to salvage as much as you can, and this "construction zone" method of bringing a section of your animation back to what your blocking should look like is a terrific way to deal with late-in-thegame change requests from the people you are working for.

Well, that's it! Hopefully this is new to some of you and you find it helpful. Next time we might jump back to the Q&A format as I have a lot of great questions to address, or maybe I'll do a little half-and-half. Feel free to email me and let me know which you prefer!

Keep animating, and as always, have FUN!!!

Shawn :)