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Starz Animation

# Animating by numbers: workflow issues in Shane Acker's 9

## Keywords

design
assets
acquisition
character animation
rough layout
colour palette

## Abstract

*This is a short overview of Starz Animation's production process for Shane Acker's debut animated feature, 9. The film was challenging to make because it was done on a small budget and a limited time frame and required a high degree of invention and creativity to address the issues raised without compromising the quality of the film. The piece details some of the ways in which we approached problems, and how we developed solutions, especially in relation to character design, art direction and workflow in the production pipeline. It seeks to offer an insight about a smaller studio seeking to make a 'Hollywood'-style animated feature that can stand up against the work of major studios like Pixar and Dreamworks, and also find a crossover audience in art cinema and festival circles.*

Starz is based in Toronto, Canada, and employs around 275 people. We are now making our sixth feature film. What differentiates Starz from major studios like Pixar or Dreamworks is that we function as a 'studio-for-hire', so if a movie requires some computer-generated characters, for example,

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*Starz Animation Studio – now typical in being configured as computer work stations, and populated by staff working on specific projects, and having a dedicated aspect of production to carry out in relation to an overall workflow pipeline.*

we might do them for a whole film, but we can essentially handle a film from development through to post-production. We operate in downtown Toronto amidst a lot of other animation studios. In this article, I want to talk about the making of an independent film and the workflow process that informs it.

The feature *9* was based on a short film made by Shane Acker. The short was seen by a producer called Jim Lemley, and he recognized that it was a beautiful film that might benefit from feature development. Lemley asked Tim Burton – who liked the film's aesthetic approach and was a 'marquee' name to open some doors – and Timur Bekmambetov, who had been instrumental in developing features in Russia, to help raise funds for the film, and they in turn took it to Focus Features, who are essentially an art-house live-action studio, but who seemed suitable in recognizing the art-house/commercial crossover of *9*. They liked the quirky approach and styling of the film, and worked on it for a year and a half before bringing in Starz as a service house to work on some scenes already in production in Europe, which were falling a little behind schedule. We ended up taking on more work and ended up doing the whole film – some 1550 shots – even reworking some scenes that had already been completed, so that the aesthetic of the film remained consistent.

Much of the initial design stage was based on the original visual concepts in the short film. We needed to visualize what this world was going to look like. These weird little puppet people were living in a post-apocalyptic environment, and though it was being done in CGI, it was very important to Acker that the whole piece was characterized by a very tactile feel, that it had a sense of 'old school' stop-motion, and that the movement in the environment responded to an authentically material world. Some of the technical aspects that had been acceptable in the short needed changing for the feature, so a lot of work had to be done to make the puppets functional, yet dress them in the same way as Acker required – the seemingly hand-made, amateur-looking 'dressing' had to hide a more sophisticated and robust 'skeleton'. This was hard work as the characters are essentially a net, with a limited pattern, and this posed problems with moving them, so we needed an extensive pose panel or pose chart – initially of about 15–20 poses identified at the beginning of the project, but added to across the production – to see where the material would stretch, how we would achieve balance, etc. The pose charts also helped different animators achieve consistent movement or emotional gestures across scenes – if we achieved a great scene with '5' looking sad, we would direct another animator to look at the pose chart on which it was based to imitate that emotional performance.

In terms of the computer generated imagery, we were able to build one rig for half of the main characters – 1, 2, 5, 7 and 9 all had the same rig. We customized bigger characters, like 8, and adapted the main rig for smaller characters like 3 and 4. The reason for this was that we were really working on a low budget, but we wanted to get Focus's usual independent art-house feel, as this was not a high concept Pixar movie, and certainly not a movie for children, being quite violent and dark. This
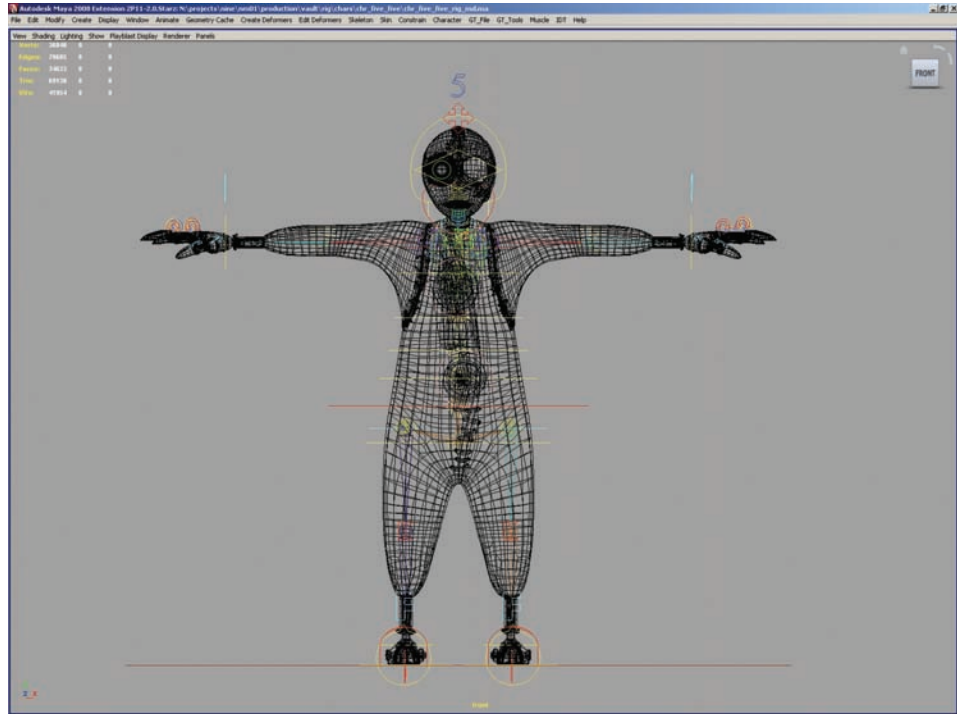
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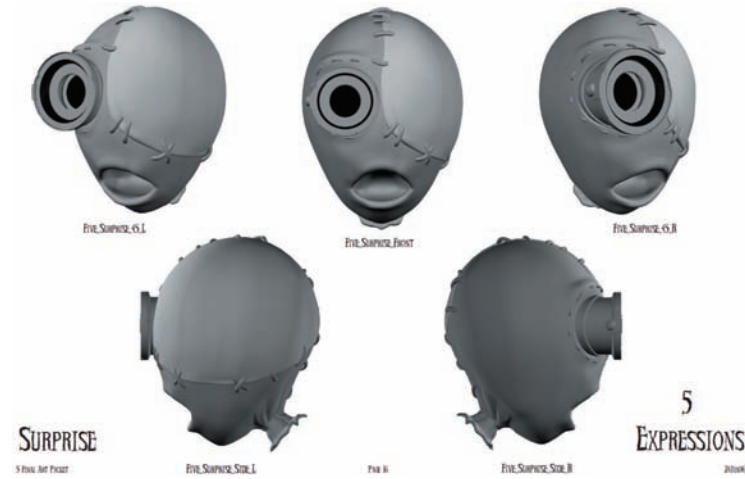*Initial drawn design for the character '5'.*



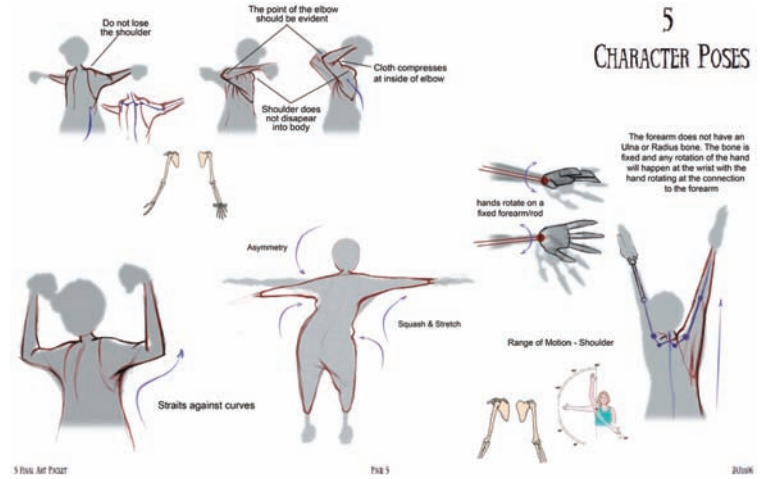*Initial working computer model for '9' and '5'.*



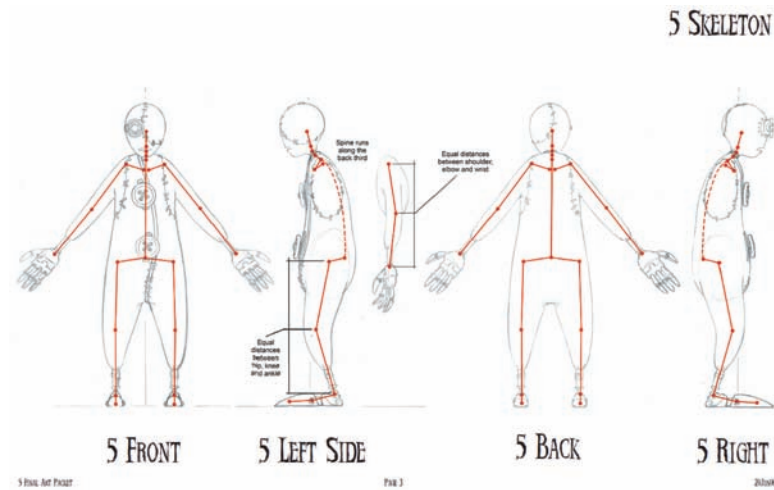*Custom rig for several of the leading characters, including '9' and '5'.*

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*Pose chart for 'surprise' in character facial expressions.*



*Character poses for '5' with technical advice.*



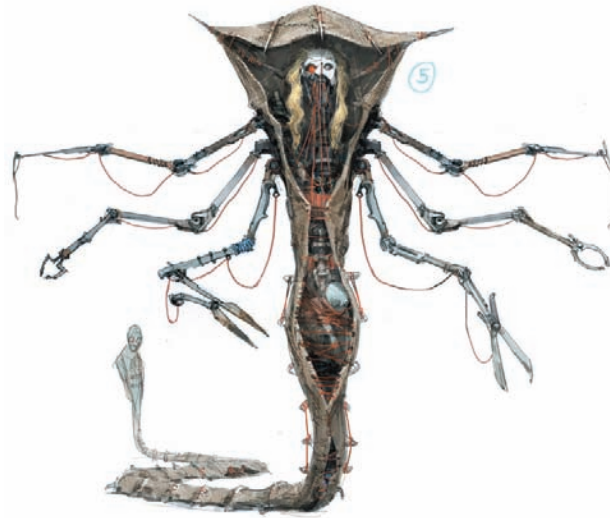*Skeleton indicators for rig reference and later animation.*

made us very creative, as we wanted to get as much of what Acker wanted on to the screen as possible, and at high quality. We were especially inventive in relation to textures, for example, where we scanned lots of real-world material, adapted photographs, etc. A lot of attention was given to the mouths of the characters, as there is so little in the original character design that you can animate. The irises for the eyes can dilate, and the mouths can contract and expand, but there was little else. This was problematic because there were a lot of sophisticated emotional moments and a lot of backstory to convey. It was quite hard for the animators, therefore, to find the emotional performances in the characters, and this was crucial as the backstory has a lot about the characters caring for each other. They had to achieve a lot through body language and key poses, and a great deal through what could be suggested through the eyes and mouth. Once we got a turnaround, surfaced model to a certain level, for example, we would try and place it in a key environment, so we could judge how it could be lit, and how particular kinds of specularity in the 'eye-cans' might communicate something. Using a rough set-up was extremely useful in seeing how colour and lighting might communicate emotion. Also, this was important in helping to differentiate the characters, 6 and 8 particularly, who posed particular problems because they were essentially white. For example, 8 looked bright blue in some environments so we had to adjust him almost on a scene-by-scene basis.

This focus on character was effectively where we started. One of the issues that was quite challenging was the ensemble nature of the characters. A lot of the time it seems that you have nine characters altogether. So it seemed, at first, that we would have to build all the characters straight away before any work could be started. Usually, you might have one or two central characters that can be plotted through scenes, and a workflow allocated accordingly, but here we had a number of the characters on-screen most of the time, although, quite helpfully, we saw in the storyboard that as one gets discovered another one often gets killed !! So, we developed a workflow looking at when the fewest or the same characters were involved. We built 9 because he was in the first sequence and the only one in it, then we added 2 as he emerged, and so on, and this helped us create sequences. Because 5 looked a lot like 2, we could build him really quickly, and work on a range of sequences with those characters. Throughout, 'animation' was really chasing 'rigging' and it was a very intensive process. The beast characters were entirely different, and highly complicated, as well as time consuming. The 'Seamstress' and the 'World-Building Machine' were highly complex designs and rigs. They were the last characters completed. Basically, the workflow was created on the basis of how we could match technical requirements – effectively the number of built characters – to when they emerged in the story, saving as much time and money as we could. Though the film was, therefore, made out of sequence, it did not matter, as we had a nearly fully developed storyboard.

We then looked at sequence-specific needs. For example, creating the mustard gas bomb, which was part of the flashback sequence, and the war machine, which had already been designed by Acker's unit in Los Angeles. We received orthographic views and technical guide information for the
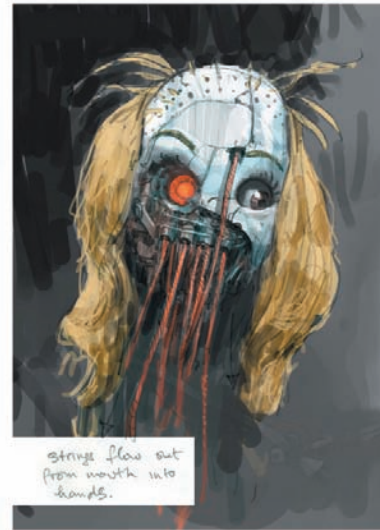
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## SEAMSTRESS CONCEPT DESIGN



*One of the more complex characters in design and animation, the Seamstress, who captures characters in the sewn mesh of her own body.*

modellers. This threw up the issue of 'scale' as we had to put together elements that seemed to have different scale references. We had to decide how to actually shoot the material. We had to decide if we were shooting 10-inch tall characters, and photographing them with a heavy depth of field, which can be hard to watch. We decided upon a creative conceit in which we would pretend that there was a miniature cameraman, who was also 10 inches tall, and had a 10-inch tall camera, and the laws of physics, which would be applied to the photography, would be scaled down accordingly. So, essentially you become part of the scale of their world, and everything is in proportion. This becomes clear when you see some of the dead people lying around or compare the characters to other objects and bigger environments.

In relation to a lot of design and layout much of this work is done in 2D – it is drawn, Photoshopped, painted – and we build as many of the assets in advance before we get into shot and sequence production. We decided to geometry-optimize as many of the assets as we could, which means that we could adjust the shape and view of something to make it look different, so that within any one shot we could save on rendering. There was so much rubble, for example, we merely rendered a few pieces then optimized placement and shooting issues. This meant going to layout as early as possible and using as much pre-visualization as possible to facilitate trajectories and rendered elements. If the camera was placed in a certain position we could judge very early what was going to be seen and what would be less seen, and plan what was required accordingly. Thankfully there is always something being knocked down or rebuilt in Toronto, so we could always go and photograph a lot of reference material. We had to do a burned-out car, too, so we repurposed some footage from a movie called *Everyone's Hero* (Colin Brady, USA/Canada, 2006) which featured lots of 1930s cars. We retextured it, of course, and did a lot of visual distressing, and that served our purpose well, and it serves as a good example of using extant or previous acquisitions and assets. Reusing materials by turning it around and shooting from a different angle was also another strategy. The art department goes through every shot and creates a colour 'thumbnail' too, in order to establish colour tone, hue and saturation. All of this is considered in what we call 'The Blue Book' reading, which considers every shot from a technical point of view in relation to the assets, assembly and animation. We then allocate tasks, and define specific work, because in the time frame we had we did not want to create anything that was not actually, ultimately going to be on-screen.

We move from storyboard to animatic to pre-visualization and rough layout, where sometimes we use low-resolution real assets to help us get the strongest sense of what the film will look like. Rough layout essentially takes into account camera blocking (the movement of the camera) and the basic performance poses of the main characters. There are no effects or animation at this stage, but there is hopefully a strong sense of the action in relation to a developing narrative. Because many of the characters looked so similar in the early stages we had to colour code them at this stage in the

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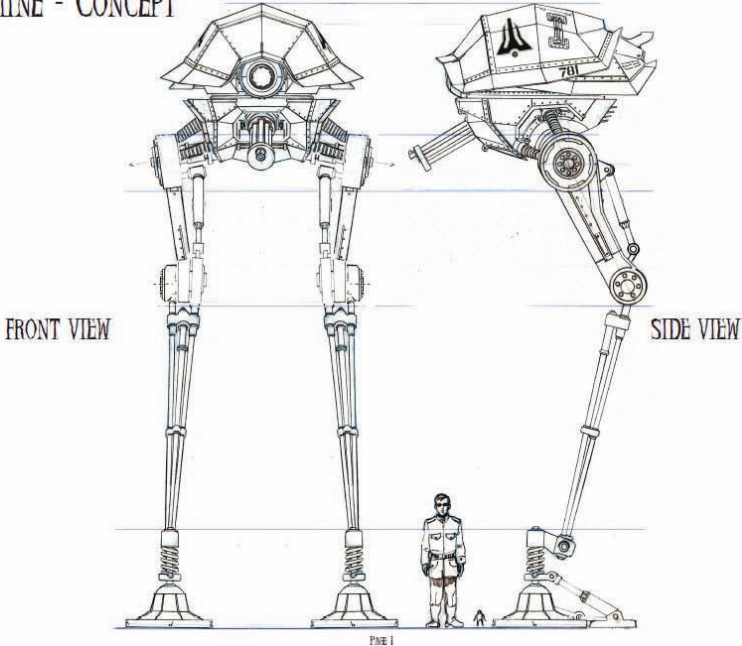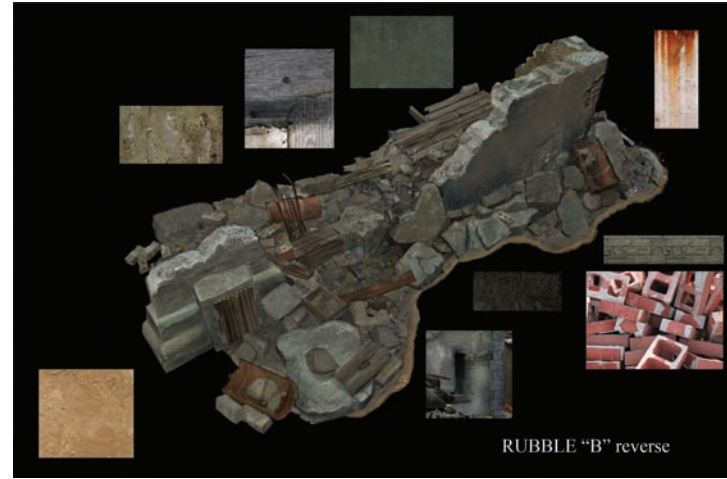


One of the original designs for the 'War Machine', which takes on a life of its own and ultimately destroys humankind.
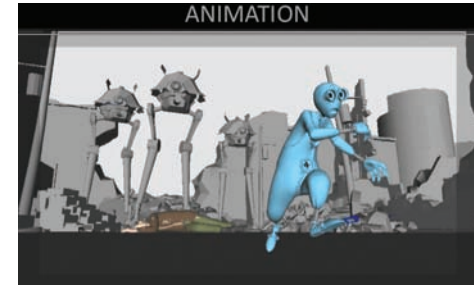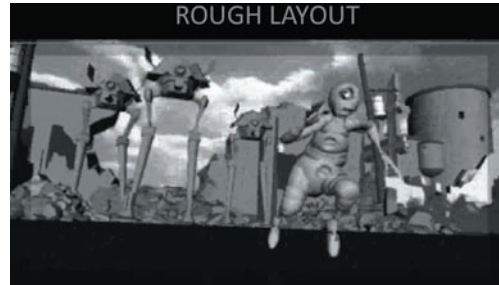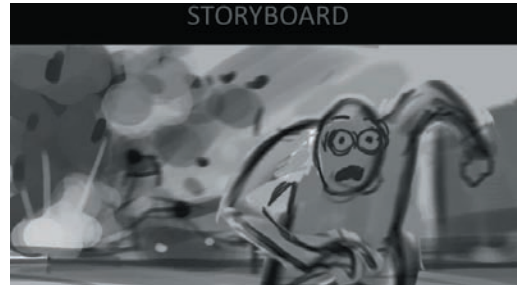
*Texture chart for the key ragdoll/humanoid characters.*



*Texture chart citing sources for rubble texture and potential geometric optimizing of rubble assets, so the same rubble could be seen from different angles for different purposes and scenes.*

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*A shot development sequence from initial storyboard to rough layout to animation to the addition of effects, including lighting and compositing, and mapped against a pre-visualization colour script.*

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*Colour script from a sequence in 9 showing the dense and limited colour palette, using earth tones and hues, to signal something organic in a 'dead' world.*

preparation. We move to character animation as soon as we can, and support that with effects animation in relation to things like dust, cloth, etc. This mostly works in parallel, and we try and develop a linear process across a shot.

There were three essential challenges. First, the character animation, especially in regard to the design and the physical storytelling. Second, the construction of this world, which though it had a homogeneity as a post-apocalyptic environment, there were lots of diverse places they had to go to – everything basically blew up, was burned down or destroyed by machines. Much of that was about looking at the frame, and deciding how it might look most effective, so we used a lot of matte painting. The characters remained in 3D, the foreground environment remained in 3D, but thereafter, it was often rough geometry, and matte painting on a variety of planes. There was the benefit of immediacy in this; for the most part we had a clear sense of what things were looking like. The third concern was the dark palette of the film, and whether this would work not only in the cinema, but when it translated to television. At one level we exploited the colour script to both hide some things and suggest others, and the darkness was 'forgiving' in some scenes with the large machines. A lot of work was done in post-production, particularly in colour correction, to anticipate what its readability would be in all formats, and to make sure it could be viewed easily. For a low-budget crossover movie, we believe we met the challenges, and created an unusual and appealing film.

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## Contributor details

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