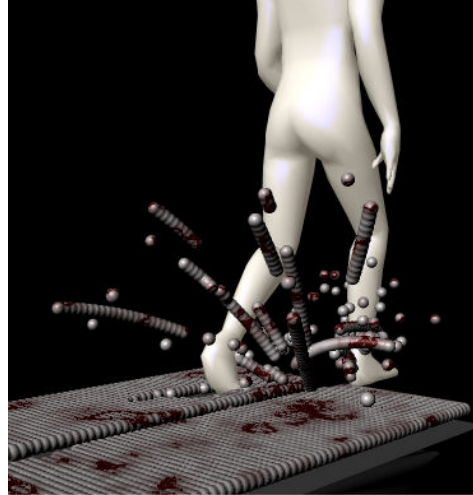
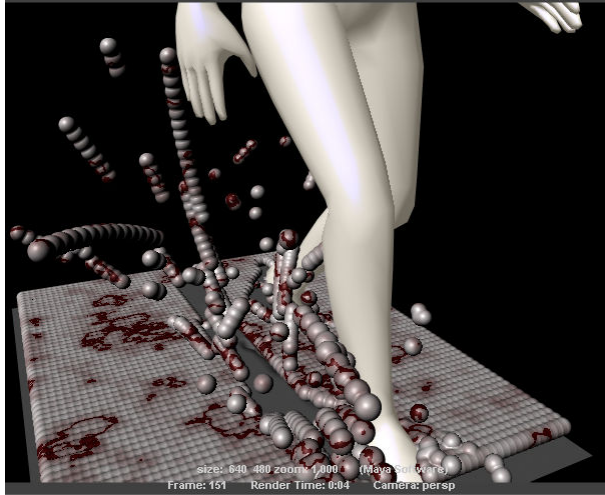


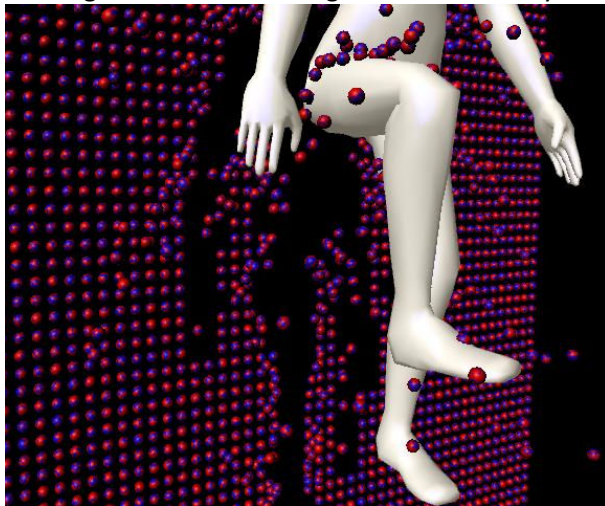
Designing environments for animated characters

JMG - Fall 2008

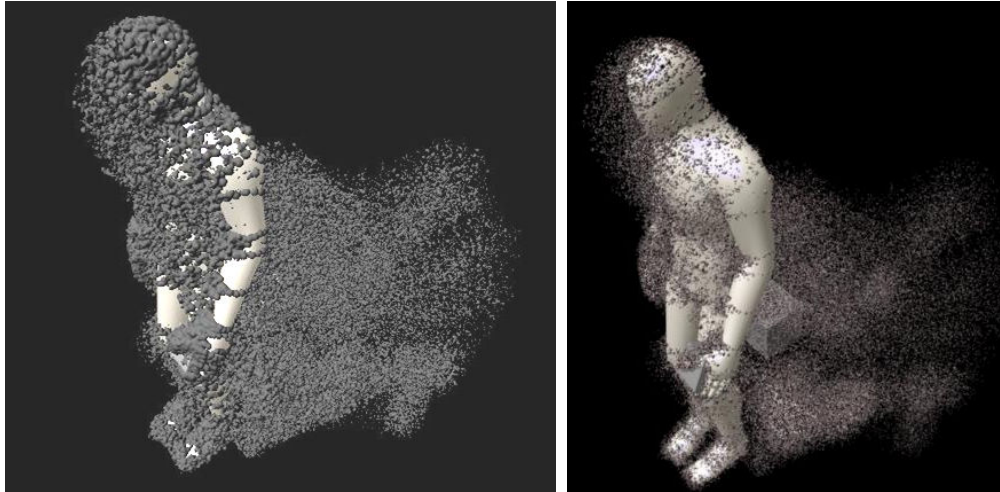
This tutorial shows how to express visually a character moving inside its environment. We will use motion capture and particle animation to create a spatial expression of motion. The tutorial will focus on rendering footprints.



Walking on a floor. Crossing a wall made of dynamic elements



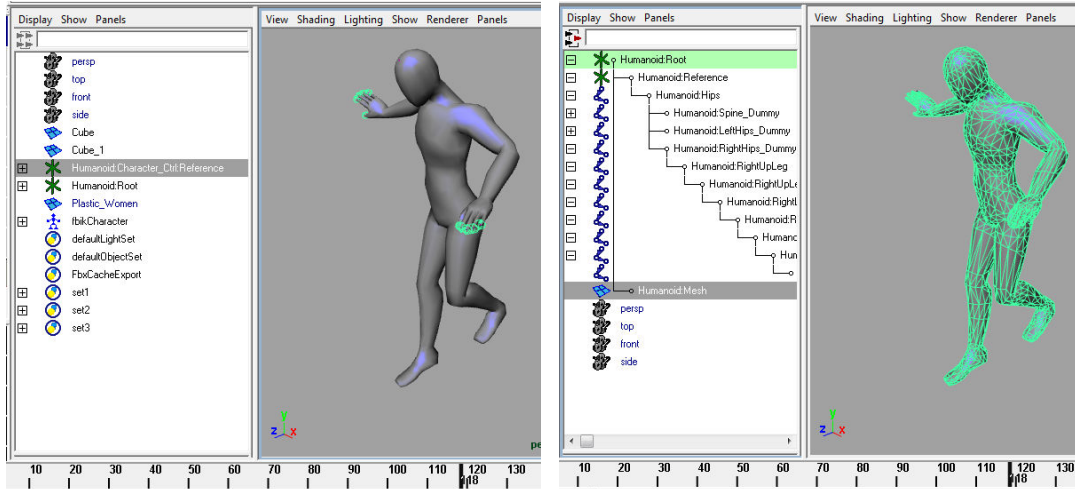
Creating a motion trail of particles surrounding an animated character



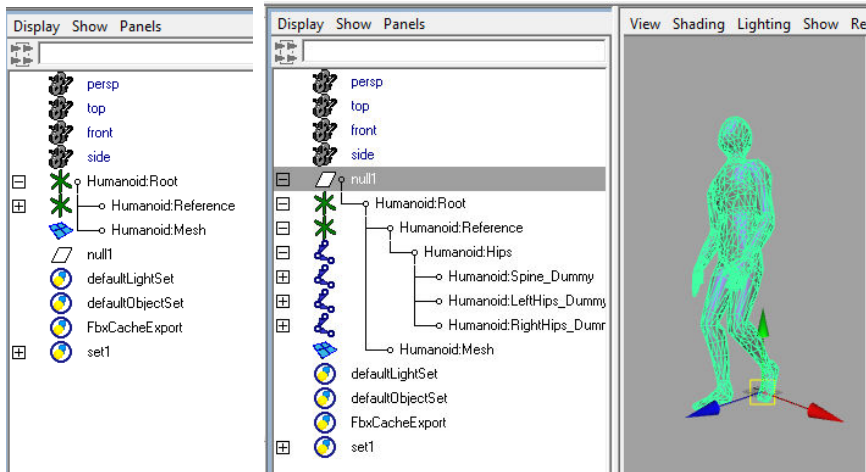
Character surrounded by a trail of particles.

Part 1 – From Motion Builder2Maya

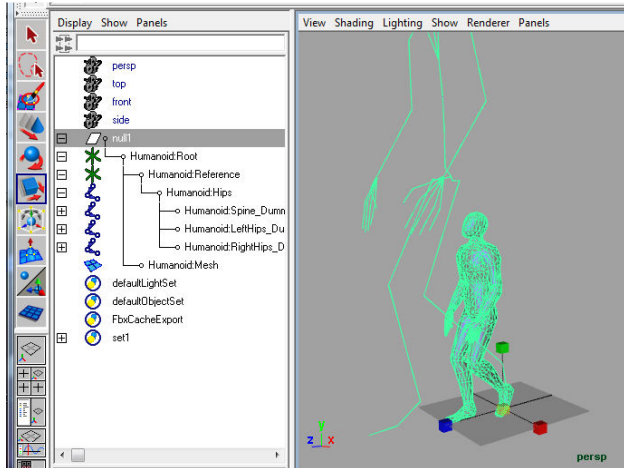
We import a motion capture file and a character from Motion Builder.



Go to file import, choose fbx, import the character and the animation. Please note that the MB character has two rigs. You can select and delete the CTRL rig. You will use only the Humanoid rig in Maya.

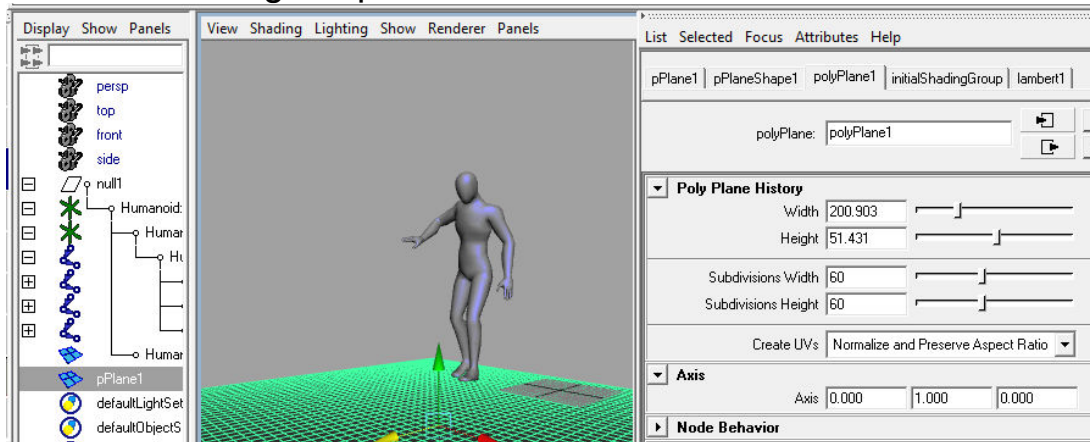


You may need to scale the animated character including mesh and root, go to Create > Empty Node. Make the Humanoid Root a child of the Empty node, you can MMB the Humanoid Root and DRAG on the Empty node. In Outliner, select only the Empty Node and scale the character.

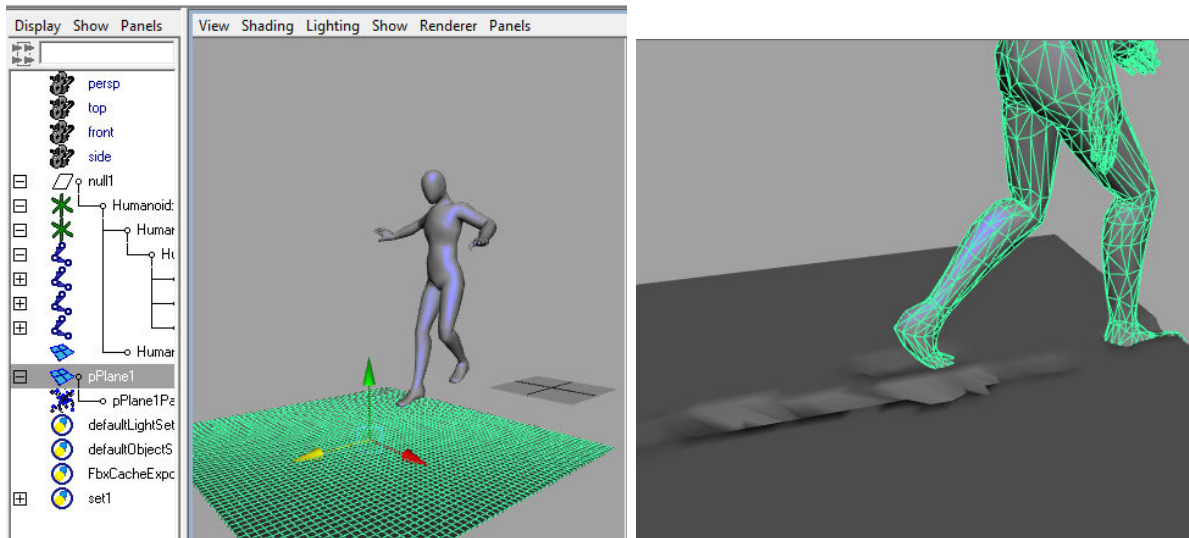


Please note that the size of the skeleton may look different from the mesh but this has no consequence on the character animation.

Part 2 – Creating footprints

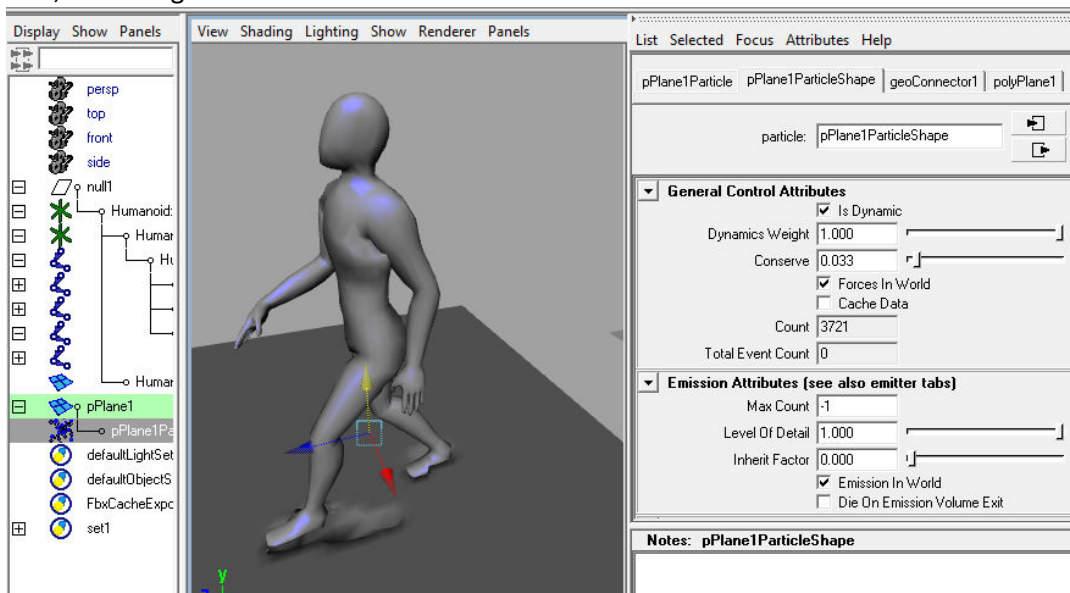


Create a polygonal plane, Create > Polygonal Primitive > Plane, subdivision 60 by 60. If you increase the subdivision, the resolution of the simulation, the demand for computing and the risks of computer crash increase as well.

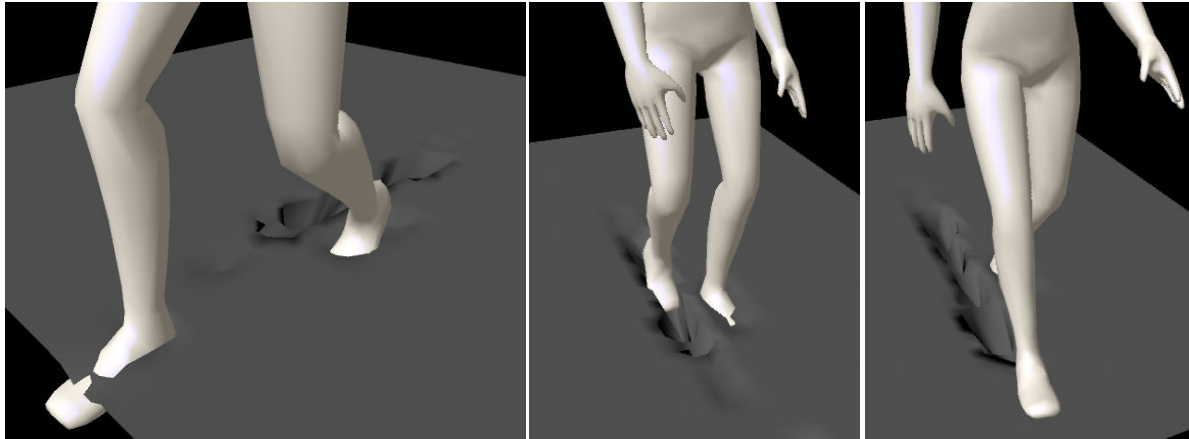


Select the plane, in green. Go to Dynamics > Soft/ Rigid Bodies > Create Soft Body, Creation =Make Soft. A plane-particle is created under the polygonal plane. SHIFT + select the plane-particle and the mesh of the character. Go to Dynamics > Particle > Make Collide.

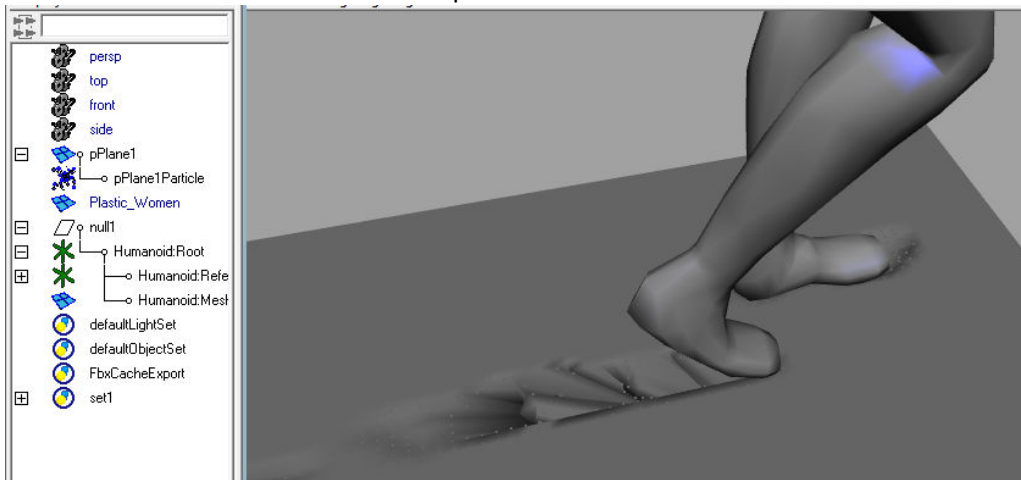
In Timeline, go to frame 0 and start playing back the animation. The footprints will appear when the feet of the character hit the plane. The depth of the characters footsteps inside the plane need to be adjusted in order to convey the visual idea of walking in a layer at the surface of the plane. For example dust, snow or grass.



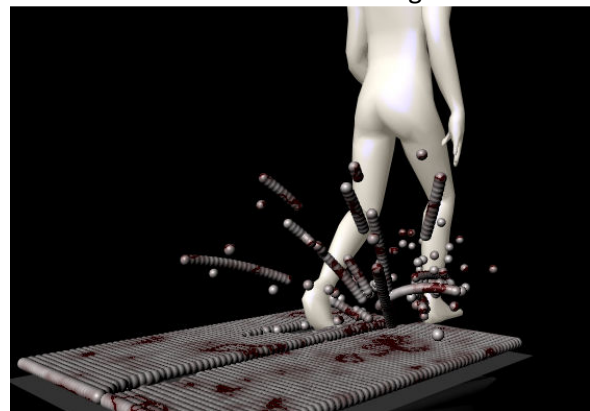
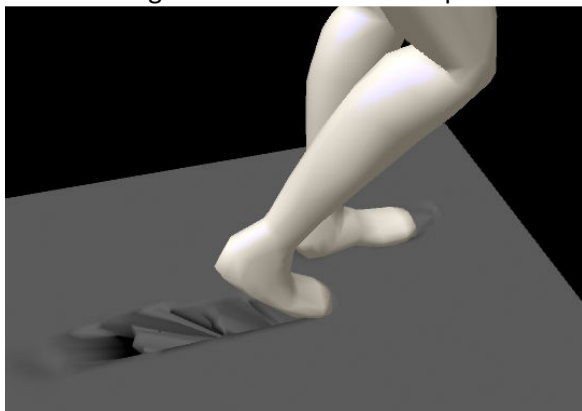
Lower the value of conserve in order to keep the particles around the area of the collision.



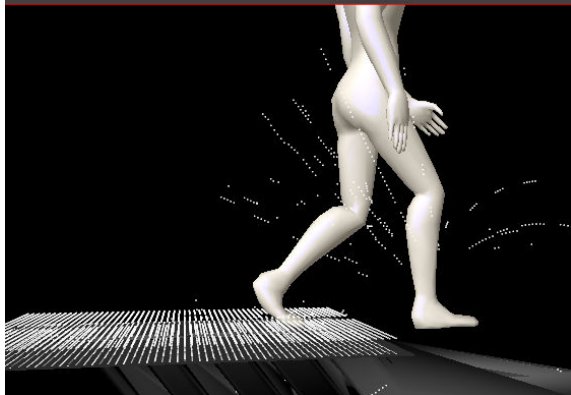
The floor is a polygonal plane with a soft body attribute. The deformation of the plane is guided by the collision of the character's mesh with particles.



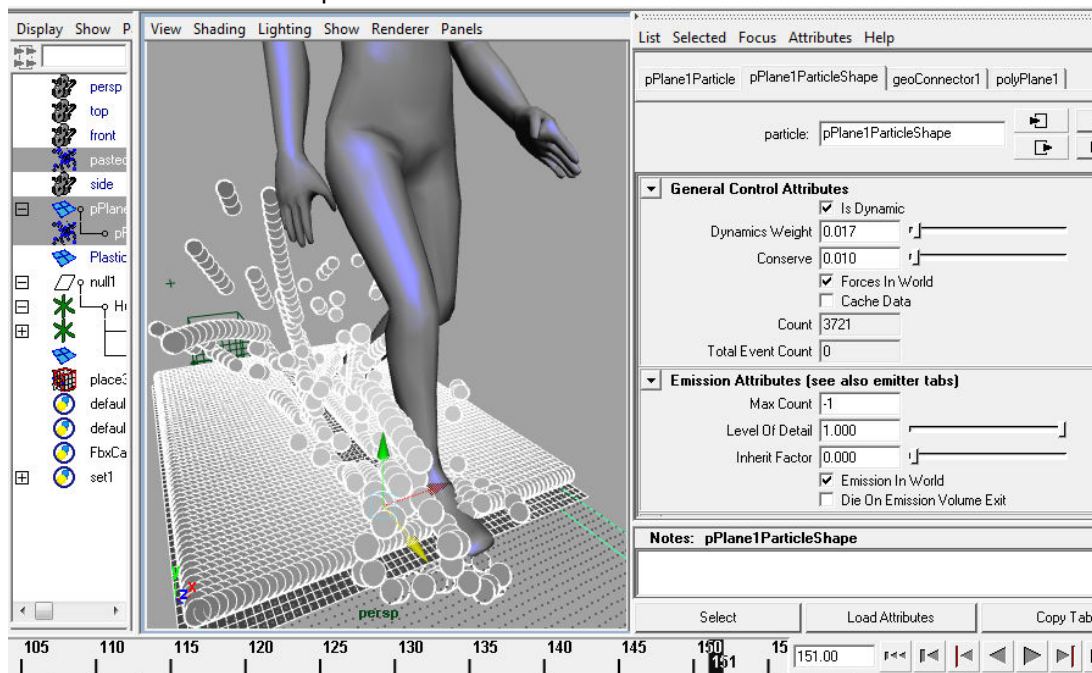
The following illustrations show how particles and deformations can be combined together.



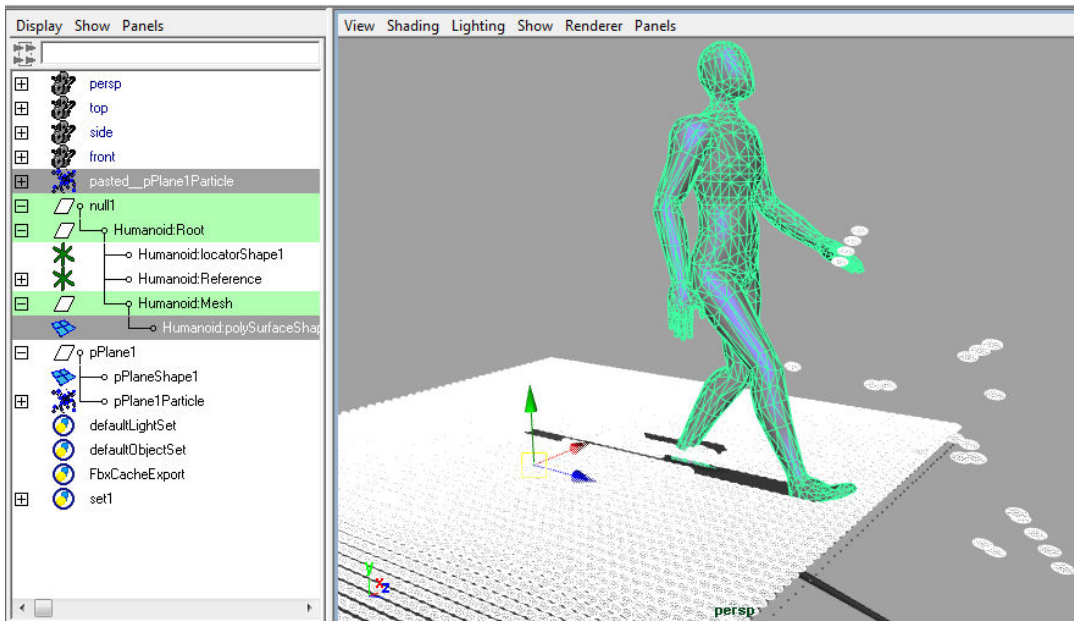
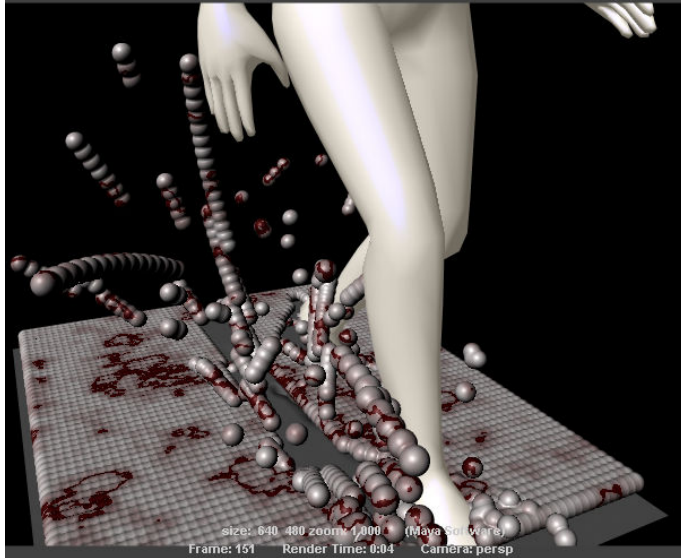
Walk creating footsteps with plane deformation. Walk creating footsteps with added particles.



Let's create additional particles in order to simulate a splash with pieces flying in the air. Select the particles parented to the plane, go to Edit > Duplicate the particles or Edit > Copy/Paste the particles. This creates a new field of particles.



In Outliner, un-parent the new field of particles from the plane. MMB + DRAG the new particles away from the plane. Heck the conserve value of the second particle field. Lower values of Conserve will keep the particles closer to the area of collision.



Higher values of conserve send particles from the new field flying away.

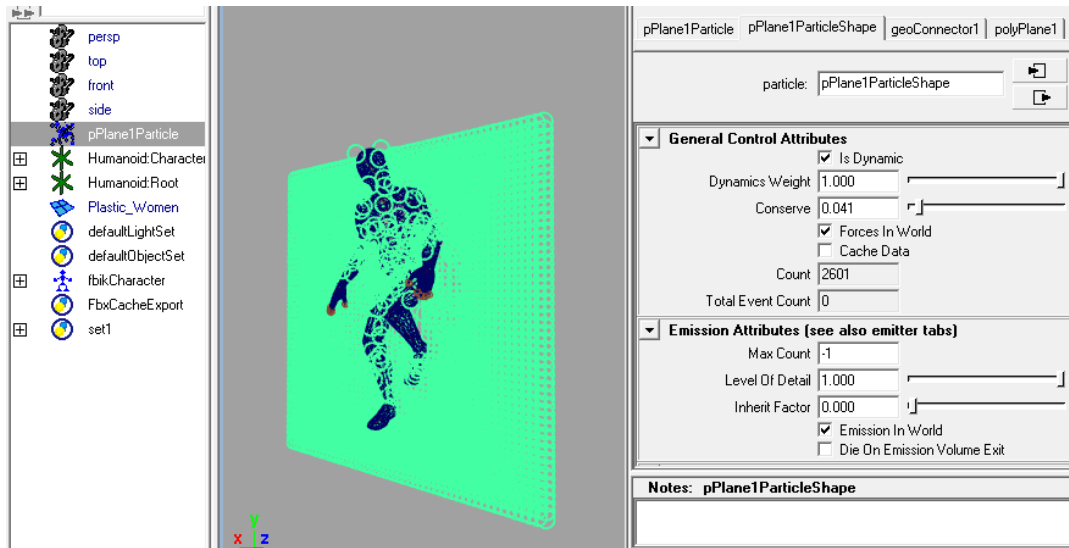
In the following illustrations we create a character walking across a wall of particles.

Let's create a wall, a polygonal plane, Create > Polygonal Primitive > Plane, subdivision 60 by 60.

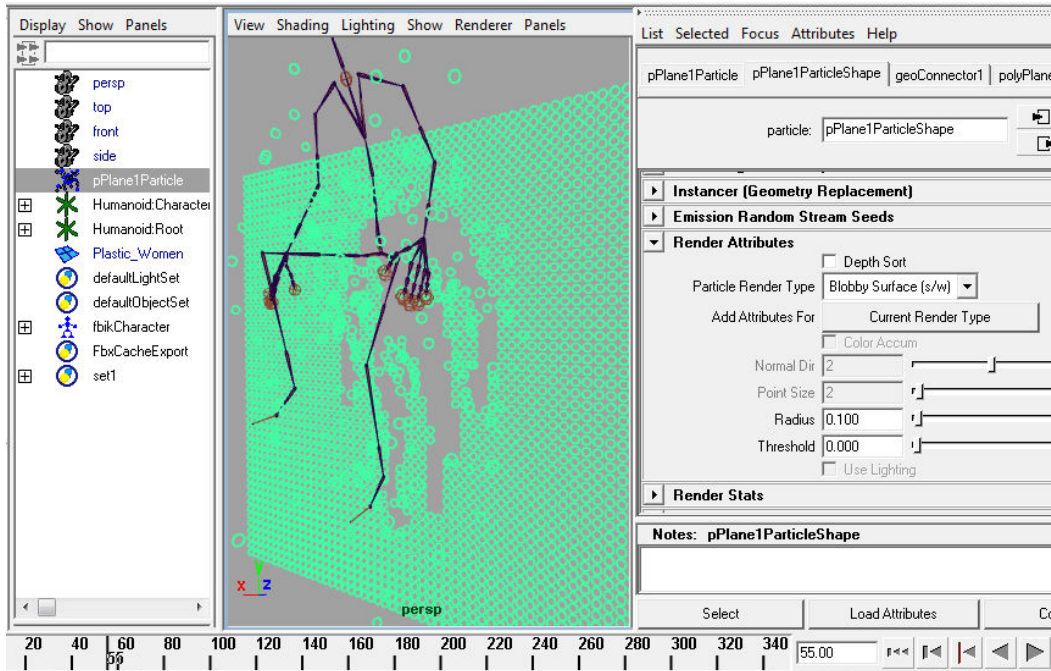
Select the plane, in green. Go to Dynamics > Soft/ Rigid Bodies > Create Soft Body, Creation = Make Soft.

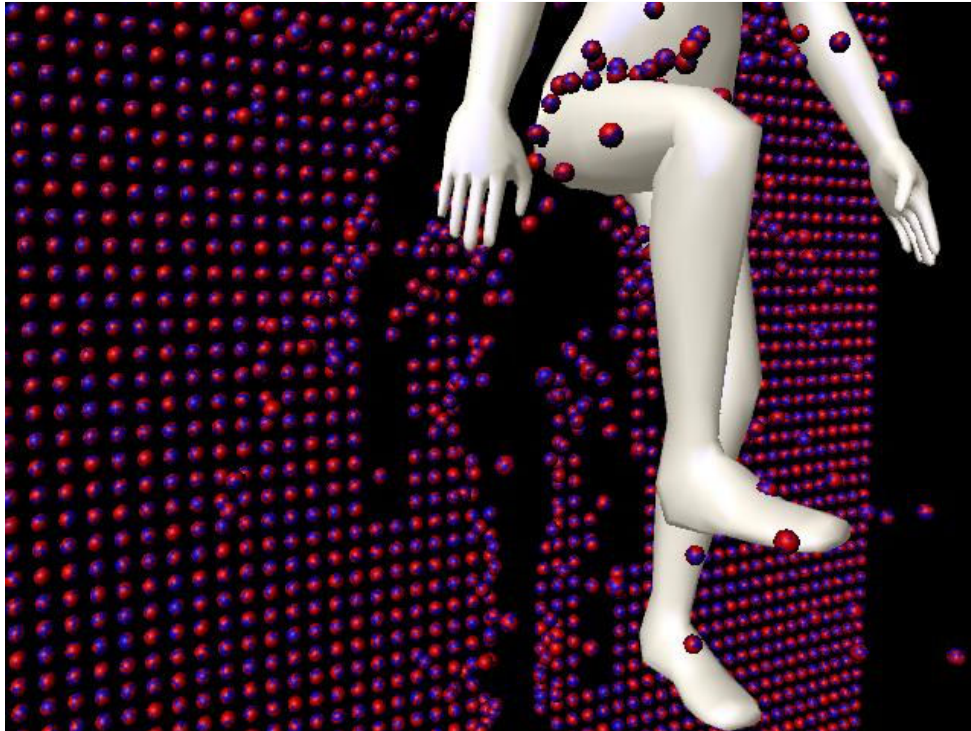
A plane-particle is created under the polygonal plane. In Outliner, select the particle MMB + DRAG move away from the plane. SHIFT select the Particles + Character's mesh, go to Dynamics > Particle > Make Collide

Part 3 – Crossing a wall



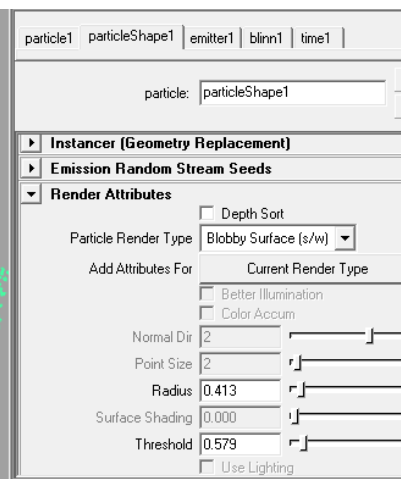
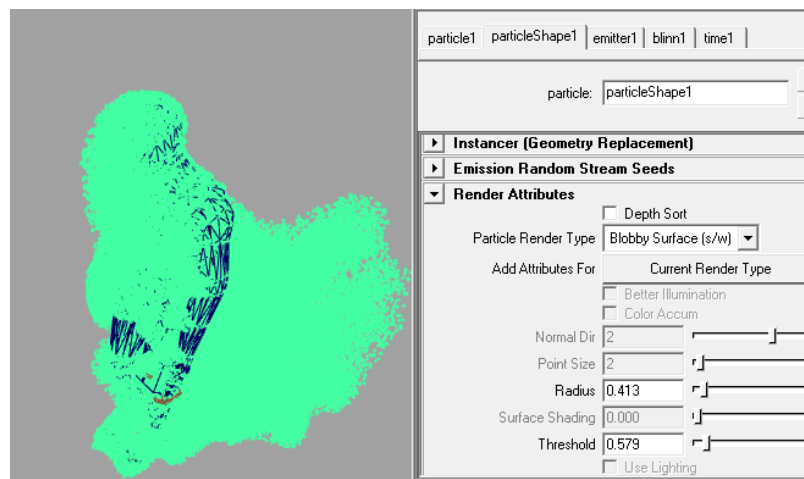
Go to ParticleShape > Adjust Conserve. Go to Render Attributes > select Blobby Surface, Radius = size of particle and Threshold = melting particles together into blobby shapes. Decrease Threshold for increasing the melting factor.





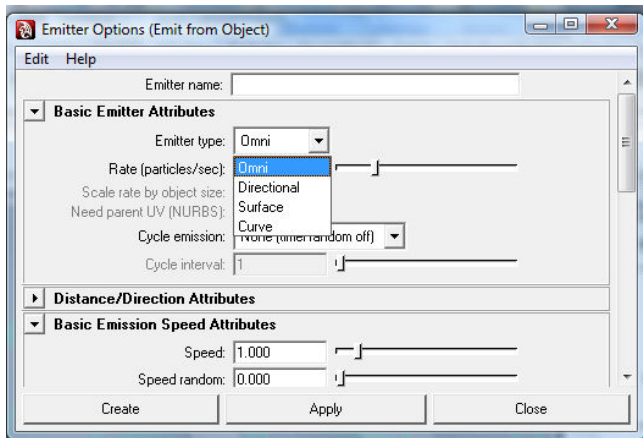
Go to Render Attributes > select Bloppy Surface, Radius = size of particle. Select the particles > RMB > Assign a New Material. Go to Windows > Rendering Editors > Hypershade. Go to Create Maya Nodes > 3d Textures > Marble or Crater, see above examples.

Part 4 – Creating a trail and rendering particles



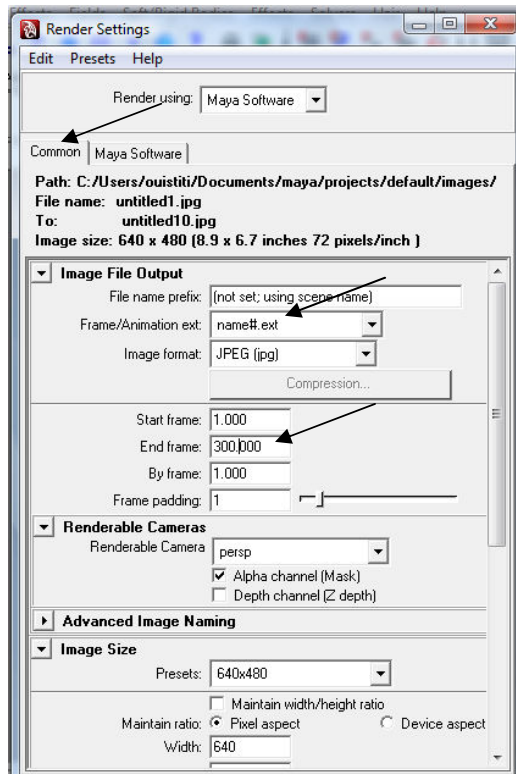
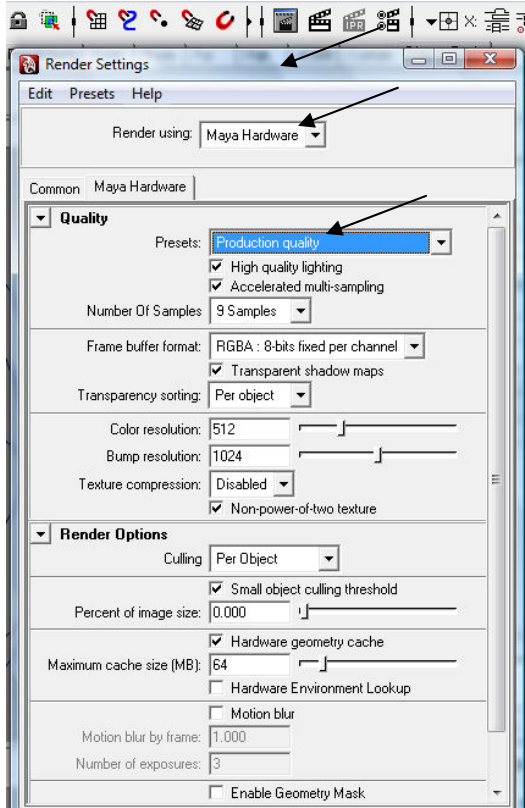
You can simply create a trail of particles by transforming the mesh into a particle emitter.

Go to Dynamics > Particles > Emit from Object > Omni



Go to ParticleShape > Render Attributes select Bloppy or others.

Rendering: For best results select the Hardware Mode



Go to Rendering > Render > Batch Render