

# GETTING STARTED

with **MotionBuilder**

CLICK ON ONE OF THESE TILES TO VIEW THE COMIC STRIP!

1 INSTALL THE APPROPRIATE FBX® PLUG-INS.



2 EXPORT A SCENE FROM MAYA® OR 3DS MAX®.



3 LOAD A SCENE IN MOTIONBUILDER®.



4 SET UP A CHARACTER.



5 ANIMATE THE CHARACTER BY LOADING ANIMATION OR BY KEYFRAMING THE CONTROL RIG.



6 EDIT THE CHARACTER ANIMATION.



7 PREPARE FOR EXPORT.



8 IMPORT A MOTIONBUILDER SCENE IN 3DS MAX OR MAYA.

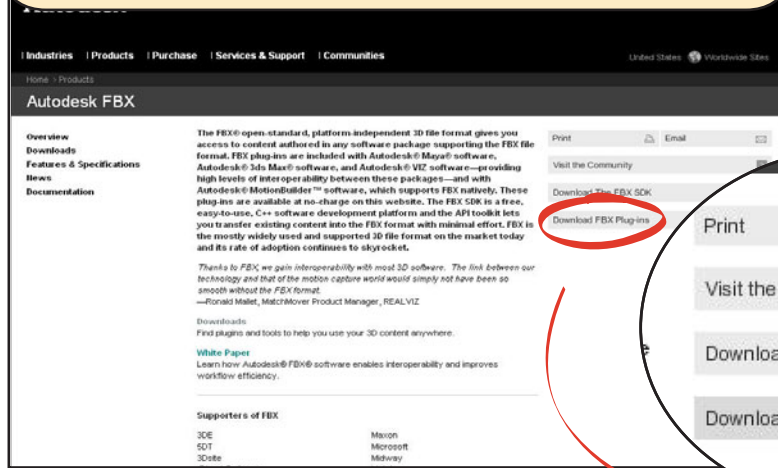


THE END

# INSTALLING the FBX PLUG-IN

BEFORE YOU CAN GET YOUR WORK MOVING BETWEEN 3DS MAX OR MAYA AND MOTIONBUILDER, MAKE SURE YOU HAVE INSTALLED THE MOST RECENT FBX PLUG-IN.

**1** GO TO [WWW.AUTODESK.COM/FBX](http://WWW.AUTODESK.COM/FBX) TO DOWNLOAD THE LATEST FBX PLUG-INS. CLICK DOWNLOAD FBX PLUG-INS.



**2** FILL OUT THE FORM THAT APPEARS AND CLICK SUBMIT.

**FBX Plug-in and Converter Downloads**

\* Indicates a required field

\*First Name

\*Last Name

Job Title

\*Company

\*Address 1

Address 2

\*City

\*Country/Region

\*State/Province

\*Zip/Postal Code

\*Work Phone

\*Email Address

\*Email Address (re-confirm)

\*Which of the following best describes you or your business?

**3** YOU ARE TAKEN TO A PAGE WHERE YOU CAN DOWNLOAD THE PLUG-INS. THEY ARE CATEGORIZED BY TYPE, OPERATING SYSTEM, THEN APPLICATION VERSION.

### FBX Plug-ins for Autodesk Applications

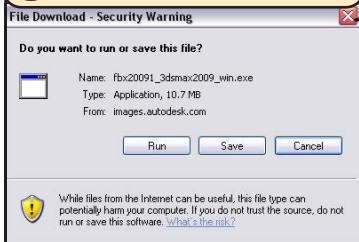
The Autodesk FBX plug-in allows all types of data to be packaged into one file format that can be used by most of today's 3D authoring software.

#### Linux

- [FBX 2009.1 Plug-in for Maya 2008 \(- 6419Kb\)](#)
- [FBX 2009.1 Plug-in for Maya 2008 64-bit \(- 6582Kb\)](#)
- [FBX 2009.1 Plug-in for Maya 8.5 \(- 6416Kb\)](#)
- [FBX 2009.1 Plug-in for Maya 8.5 64-bit \(- 6581Kb\)](#)
- [FBX 2009.1 Plug-in for Maya 8.5 64-bit \(- 6581Kb\)](#)

TO FIND OLDER VERSIONS OF THE FBX PLUG-INS, CLICK THE PLUG-IN AND CONVERTER ARCHIVE LINK AT THE BOTTOM OF THE PAGE!

**4** DOWNLOAD THE PLUG-IN.



Make sure Maya and 3ds Max are not running when you install the FBX Plug-ins.

Make sure that you've uninstalled older versions of the FBX plug-ins before you install.

NOW THAT YOU'VE INSTALLED THE FBX PLUG-IN FOR 3DS MAX OR MAYA, YOU CAN LOAD A SCENE IN 3DS MAX OR MAYA, THEN EXPORT IT TO MOTIONBUILDER USING THE FBX FILE FORMAT.

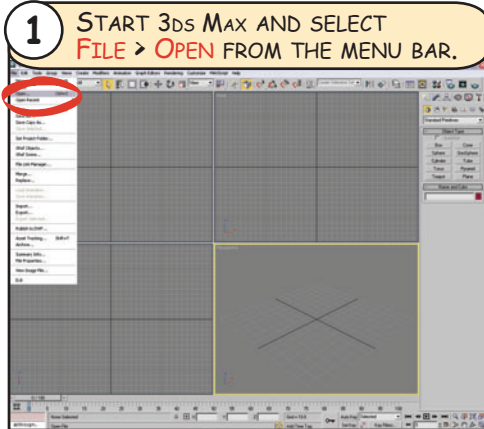
THE END

3ds Max

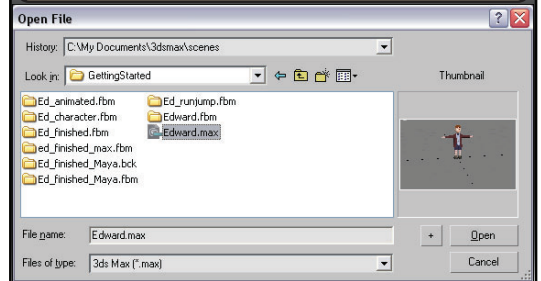
# PREPARING for EXPORT

Into MotionBuilder

AFTER YOU HAVE INSTALLED THE LATEST FBX PLUG-IN FOR 3DS MAX, YOU CAN LOAD A SAMPLE SCENE AND EXPORT IT TO MOTIONBUILDER.

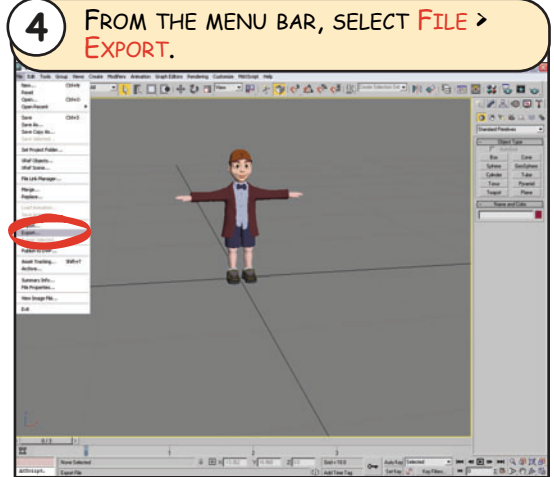


2 IN THE OPEN FILE DIALOG BOX THAT APPEARS, GO TO THE MOTIONBUILDER HELP > GETTING STARTED DIRECTORY, SELECT THE EDWARD.MAX FILE AND CLICK **OPEN**.

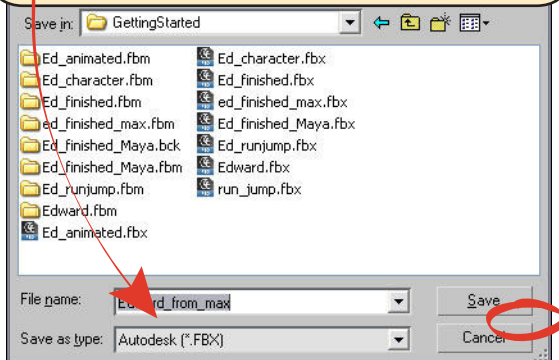


THIS CHARACTER MODEL IS MADE UP OF AN OUTER SKIN THAT CREATES ITS APPEARANCE AND AN UNDERLYING RIGID SKELETON MADE UP OF ABOUT 75 BONE OBJECTS.

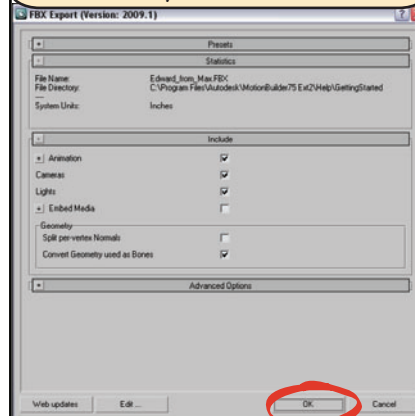
WHEN THIS MODEL IS BROUGHT INTO MOTIONBUILDER, THE BONE OBJECTS ARE USED TO DEFINE THE CHARACTER'S STRUCTURE.



5 IN THE DIALOG BOX THAT APPEARS, NAME THE FILE "EDWARD\_FROM\_MAX", SELECT FBX AS THE FILE TYPE, AND CLICK **SAVE**.



6 IN THE FBX EXPORTER THAT APPEARS, CLICK **OK**.



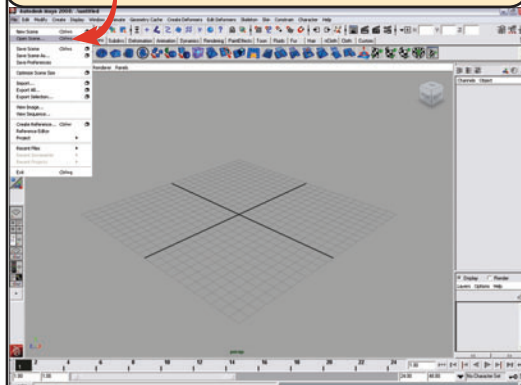
NOW THAT YOU'VE EXPORTED A SCENE IN THE FBX FILE FORMAT, YOU CAN LOAD IT IN MOTIONBUILDER.

THE END

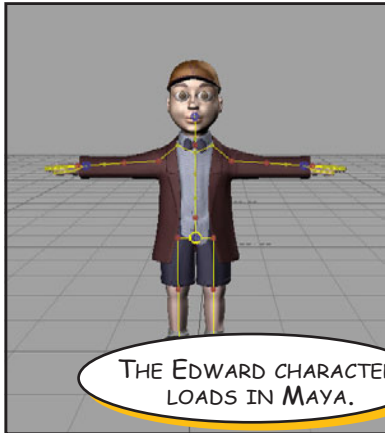
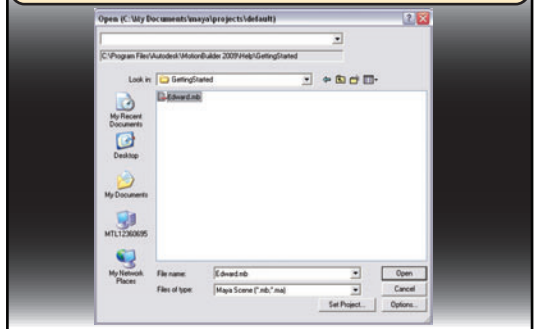
# Maya PREPARING for EXPORT into MotionBuilder

AFTER YOU HAVE INSTALLED THE FBX PLUG-IN FOR MAYA, YOU CAN START TO LOAD FILES IN MAYA, THEN EXPORT THEM TO MOTIONBUILDER.

1 START MAYA AND SELECT **FILE > OPEN SCENE** FROM THE MENU BAR.



2 IN THE FILE OPEN DIALOG BOX, GO TO THE MOTIONBUILDER HELP > GETTINGSTARTED DIRECTORY, SELECT THE EDWARD.MB SAMPLE FILE, AND CLICK **OPEN**.

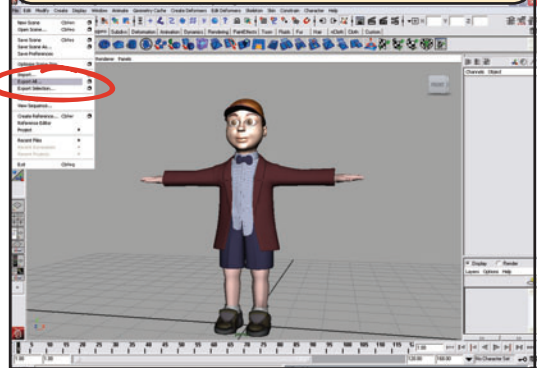


THE EDWARD CHARACTER LOADS IN MAYA.

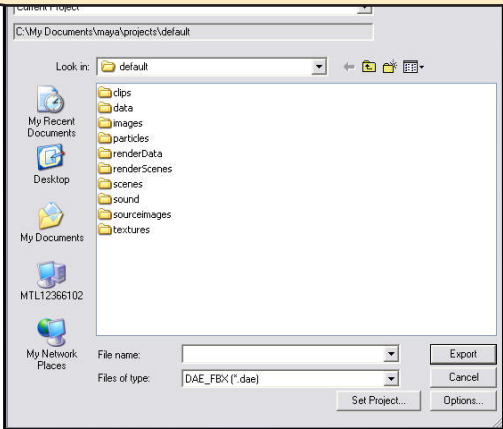
THIS CHARACTER HAS AN OUTER SKIN THAT CREATES ITS APPEARANCE, AND AN UNDERLYING RIGID SKELETON MADE UP OF ABOUT 75 INDIVIDUAL BONES.

THESE BONES ARE NECESSARY FOR THE CHARACTER SETUP PROCESS WHEN YOU BRING THE MODEL INTO MOTIONBUILDER.

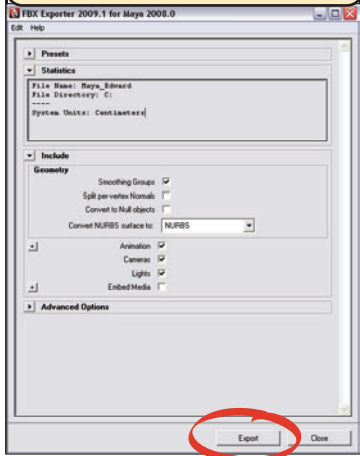
3 SELECT **FILE > EXPORT ALL** FROM THE MENU BAR.



4 IN THE EXPORT DIALOG BOX, SELECT FBX AS THE FILE TYPE, ENTER "MAYA\_EDWARD", AND CLICK **EXPORT**.



5 CLICK **EXPORT** IN THE FBX EXPORTER WINDOW.



SEE THE BEST PRACTICES FOR A TIP ON SPEEDING UP THE FLOW OF DATA DURING EXPORT.

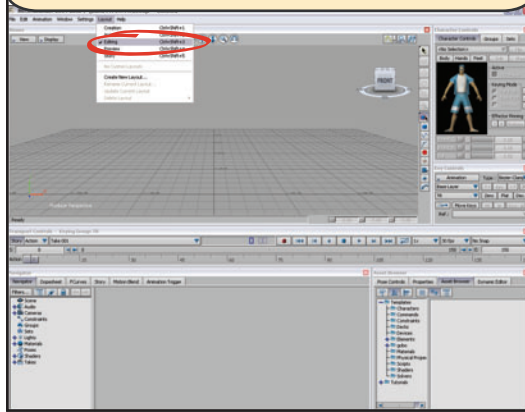
NOW THAT YOU HAVE EXPORTED THE EDWARD CHARACTER AS AN FBX FILE, YOU CAN LOAD IT IN MOTIONBUILDER.

THE END

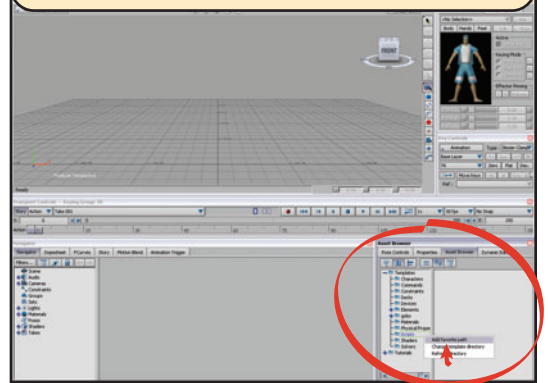
# LOADING a SCENE in MotionBuilder

AFTER YOU'VE CREATED A SCENE IN MAYA OR 3DS MAX AND SAVED IT AS AN FBX FILE, YOU CAN LOAD THE SCENE IN MOTIONBUILDER. BUT FIRST, YOU WILL CREATE A SHORTCUT TO THE SAMPLE FBX FILES YOU'LL BE USING WITH THIS GUIDE.

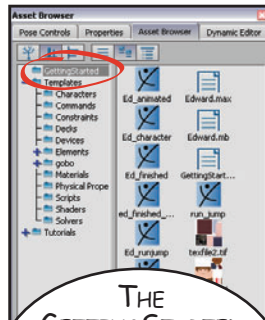
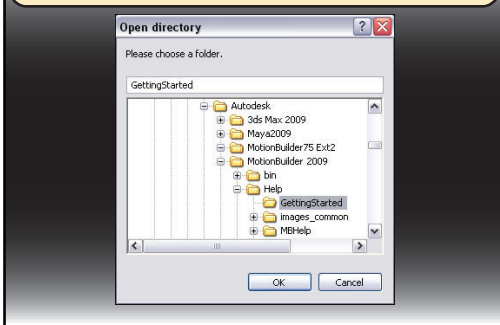
**1** START MOTIONBUILDER AND SELECT **LAYOUT > EDITING** FROM THE MENU BAR.



**2** RIGHT-CLICK IN THE ASSET BROWSER WINDOW AND SELECT **ADD FAVORITE PATH** FROM THE CONTEXTUAL MENU.

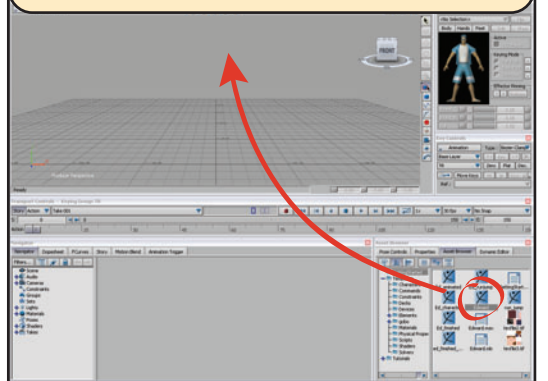


**3** IN THE OPEN DIRECTORY DIALOG BOX, BROWSE TO WHERE YOU INSTALLED MOTIONBUILDER, THEN SELECT THE **HELP\GETTINGSTARTED** FOLDER AND CLICK **OK**.

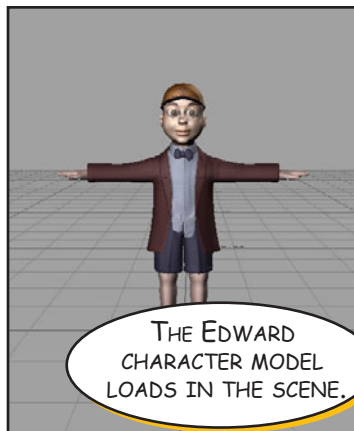
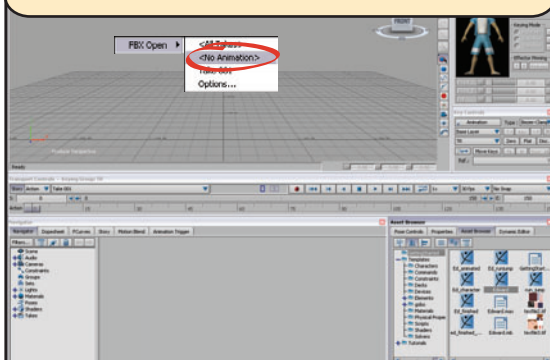


THE GETTINGSTARTED FOLDER IS ADDED AS A FAVORITE PATH IN THE ASSET BROWSER.

**4** DRAG THE **EDWARD** FILE FROM THE GETTINGSTARTED FOLDER INTO THE VIEWER.



**5** SELECT **FBX OPEN > NO ANIMATION** FROM THE CONTEXTUAL MENU.



THE EDWARD CHARACTER MODEL LOADS IN THE SCENE.

WHEN YOU FIRST LOAD A CHARACTER MODEL LIKE THIS, MOTIONBUILDER CAN'T RECOGNIZE THE STRUCTURE OF ITS SKELETON. TO MAKE EDWARD A REAL CHARACTER, YOU NEED TO DESCRIBE HIS BODY STRUCTURE BY COMPLETING THE CHARACTER SET UP PROCESS SO THAT MOTIONBUILDER CAN TELL HIS ARMS FROM HIS LEGS, AND SO ON.

# SETTING UP your CHARACTER in MotionBuilder

NOW THAT YOU'VE LOADED A CHARACTER IN MOTIONBUILDER, YOU CAN SET IT UP FOR ANIMATION.

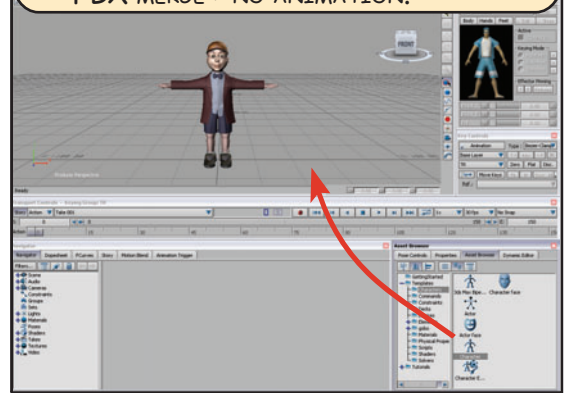
WHEN YOU FIRST LOAD A CHARACTER MODEL, MOTIONBUILDER HAS NO WAY OF RECOGNIZING ITS BODY STRUCTURE.

TO INTRODUCE A CHARACTER, YOU NEED TO COMPLETE THE CHARACTER MAPPING PROCESS.

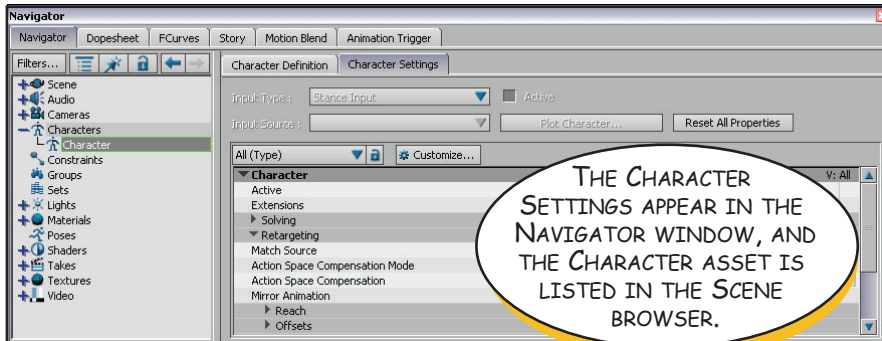
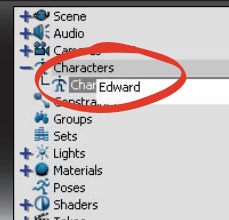
CHARACTER MAPPING TELLS MOTIONBUILDER "HERE ARE THE CHARACTER'S LEGS, HERE ARE THE CHARACTER'S ARMS," AND SO ON.

**NOTE**  
DON'T FORGET TO COMPLETE THE PREVIOUS LESSON IN THIS GETTING STARTED GUIDE, WHICH SHOWS YOU HOW TO ADD A SHORTCUT TO THE GETTING STARTED FOLDER, AND HOW TO LOAD THE EDWARD FILE YOU WILL USE IN THIS LESSON.

**1** FROM THE CHARACTER FOLDER IN THE ASSET BROWSER, DRAG A CHARACTER ASSET INTO THE SCENE, AND SELECT **FBX MERGE > NO ANIMATION**.

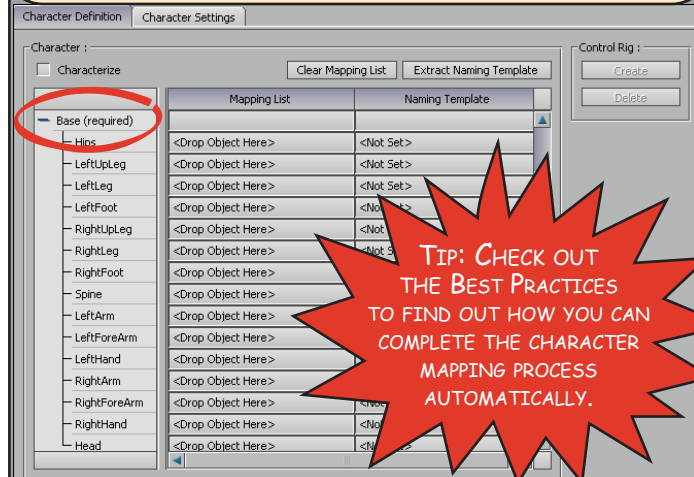


**2** IN THE SCENE BROWSER, RIGHT-CLICK AND RENAME THE CHARACTER ASSET AS "EDWARD".



THE CHARACTER SETTINGS APPEAR IN THE NAVIGATOR WINDOW, AND THE CHARACTER ASSET IS LISTED IN THE SCENE BROWSER.

**3** IN THE CHARACTER SETTINGS, SWITCH TO THE CHARACTER DEFINITION TAB AND EXPAND THE BASE GROUP OF SLOTS IN THE MAPPING LIST.

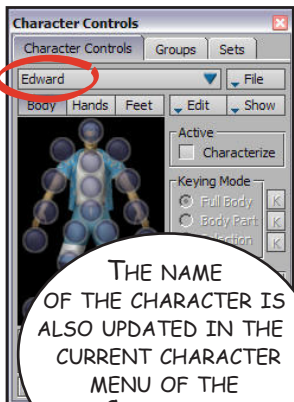


**TIP:** CHECK OUT THE BEST PRACTICES TO FIND OUT HOW YOU CAN COMPLETE THE CHARACTER MAPPING PROCESS AUTOMATICALLY.

THIS BASE GROUP OF 15 SLOTS LETS YOU MAP OUT ALL THE REQUIRED BONES FROM YOUR CHARACTER'S SKELETON.

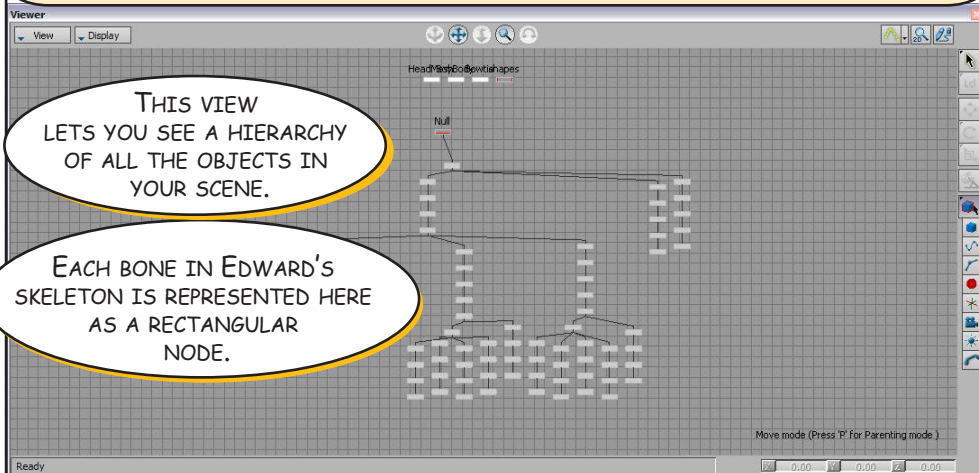
IF YOUR CHARACTER HAS MORE THAN THE 15 REQUIRED BONES, YOU CAN MAP THEM TO THE OTHER SLOTS IN THE MAPPING LIST.

FOR EXAMPLE, IF YOUR CHARACTER HAS A RIGHT SHOULDER BONE, YOU CAN MAP IT IN THE AUXILIARY GROUP OF SLOTS.



THE NAME OF THE CHARACTER IS ALSO UPDATED IN THE CURRENT CHARACTER MENU OF THE CHARACTER CONTROLS.

**4** CLICK IN THE VIEWER WINDOW AND PRESS **CTRL-W** TO SWITCH TO THE SCHEMATIC VIEW, THEN PRESS **A** TO FRAME ALL OF THE NODES.



THIS VIEW LETS YOU SEE A HIERARCHY OF ALL THE OBJECTS IN YOUR SCENE.

EACH BONE IN EDWARD'S SKELETON IS REPRESENTED HERE AS A RECTANGULAR NODE.

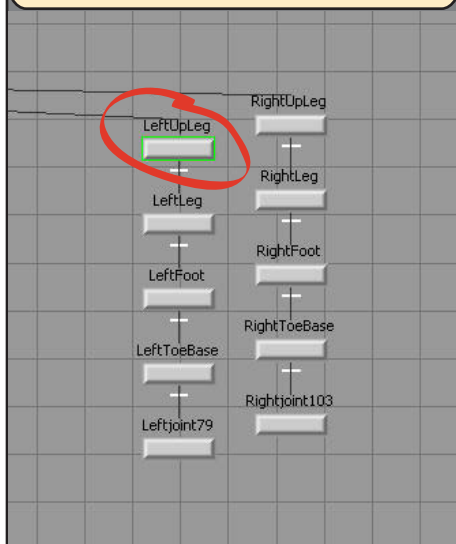
TRY THESE KEYBOARD SHORTCUTS IN THE SCHEMATIC VIEW:

PRESS **F** TO FRAME SELECTED OBJECTS.

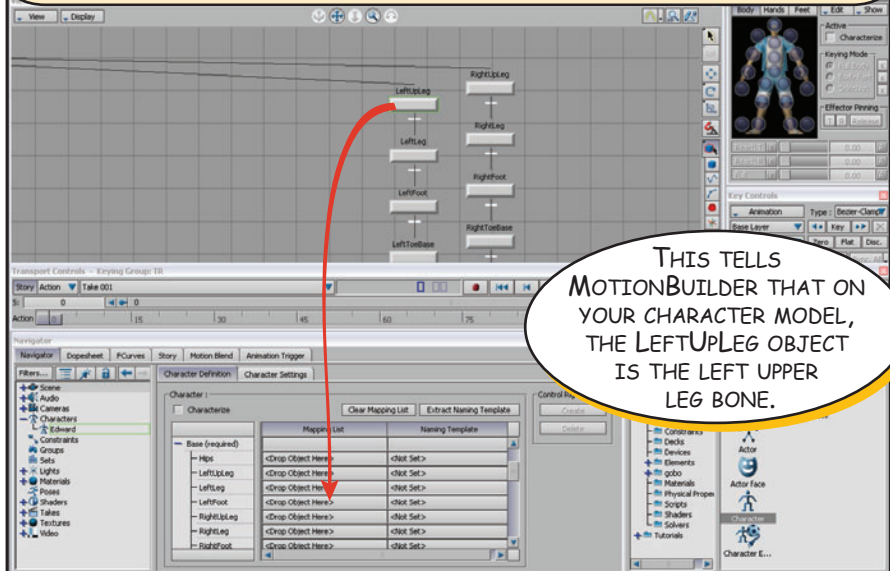
**CTRL-2** SPLITS THE VIEWER INTO 2 PANES SO YOU CAN SEE THE SCHEMATIC AND CAMERA VIEWS AT THE SAME TIME

**CTRL-W** SWITCHES BETWEEN THE SCHEMATIC VIEW AND THE CAMERA VIEW.

**5** CTRL-DRAG TO ZOOM IN THE SCHEMATIC VIEW, THEN SELECT THE **LEFTUPLEG** NODE.

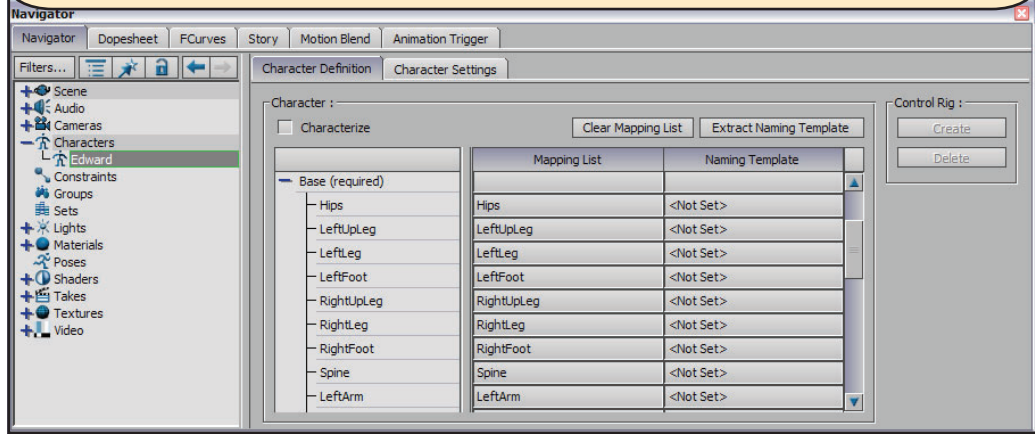


**6** ALT-DRAG THE LEFTUPLEG NODE INTO THE LEFTUPLEG SLOT IN THE CHARACTER DEFINITION PANE.



THIS TELLS MOTIONBUILDER THAT ON YOUR CHARACTER MODEL, THE LEFTUPLEG OBJECT IS THE LEFT UPPER LEG BONE.

**7** CONTINUE MAPPING EACH BONE REQUIRED IN THE BASE SLOTS. MAKE SURE TO DRAG EACH BONE INTO ONLY ONE SLOT.



ONCE YOU HAVE DRAGGED THE REQUIRED BONE INTO EACH BASE SLOT, THE CHARACTER MAPPING IS FINISHED.

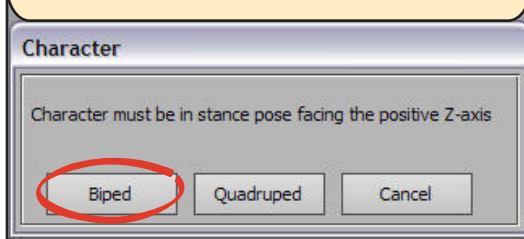
LATER, IF YOU'RE MAPPING ONE OF YOUR OWN CHARACTERS THAT HAS UNNAMED BONES, YOU CAN ALT-DRAG THEM DIRECTLY FROM THE VIEWER WINDOW INTO THESE SLOTS.



**8** ACTIVATE THE CHARACTERIZE OPTION.



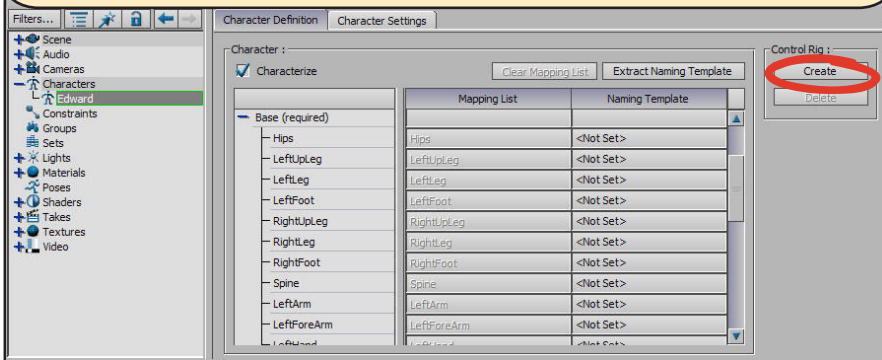
**9** CLICK **BIPED** IN THE CHARACTER DIALOG BOX THAT APPEARS, SINCE EDWARD IS A TWO-LEGGED CHARACTER.



THE CHARACTER IS NOW CHARACTERIZED. MOTIONBUILDER CREATES FLOOR CONTACT MARKERS FOR THE HANDS AND FEET, AND THE STRUCTURE OF THE MODEL IS LOCKED.

NOW, YOU'LL NEED A CONTROL RIG FOR THE CHARACTER THAT IS BASED ON THE STRUCTURE THAT YOU HAVE JUST DEFINED. LATER, YOU'LL USE THE CONTROL RIG TO CREATE AND EDIT ANIMATION.

**10** IN THE CHARACTER DEFINITION PANE, CLICK **CREATE** IN THE CONTROL RIG AREA.



**11** SELECT **FK/IK** IN THE CREATE CONTROL RIG DIALOG BOX THAT APPEARS.

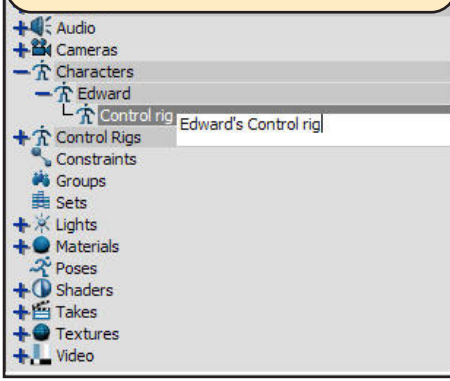


BASED ON THE SKELETAL STRUCTURE THAT YOU DEFINED, A CONTROL RIG WITH FK AND IK EFFECTORS IS CREATED FOR YOUR CHARACTER.

YOU CAN USE THE CONTROL RIG EFFECTORS TO EASILY CONTROL YOUR CHARACTER USING FULL BODY IK SOLVING.

**NOTE:** IF YOU CAN'T SEE THE RIG WHEN YOU SWITCH BACK TO THE REGULAR CAMERA VIEW, MAKE SURE THE IK AND FK OPTIONS ARE ACTIVATED IN THE CHARACTER CONTROLS SHOW MENU, THEN CLICK IN THE VIEWER AND PRESS CTRL-A UNTIL YOU SWITCH TO X-RAY DISPLAY MODE.

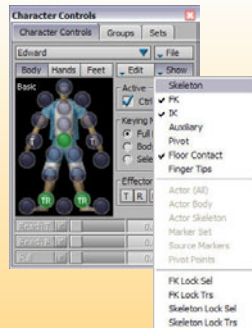
**12** IN THE SCENE BROWSER, RIGHT-CLICK AND RENAME THE CONTROL RIG "EDWARD'S CONTROL RIG".



**13** ACTIVATE THE **CTRL RIG IN** OPTION.



TO HIDE THE CHARACTER'S SKELETON IN THE VIEWER WINDOW, OPEN THE SHOW MENU IN THE CHARACTER CONTROLS AND DISABLE THE SKELETON OPTION.



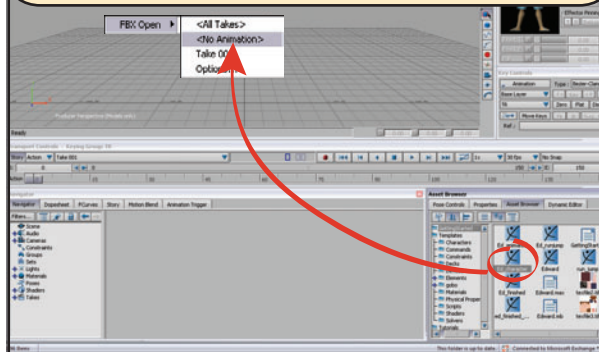
NOW THAT YOU HAVE PROPERLY CHARACTERIZED YOUR CHARACTER, YOU CAN LOAD EXISTING ANIMATION ONTO THE CHARACTER, OR USE THE CONTROL RIG TO CREATE YOUR OWN KEYFRAME ANIMATION AND MAKE THE CHARACTER MOVE!

THE END

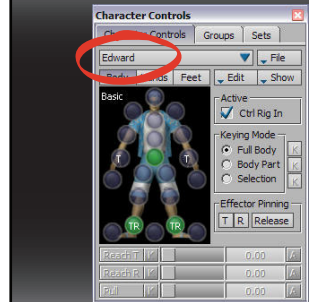
# LOADING CHARACTER ANIMATION

NOW THAT YOU'VE SET UP A CHARACTER IN MOTIONBUILDER, YOU CAN LOAD EXISTING ANIMATION TO MAKE THE CHARACTER MOVE.

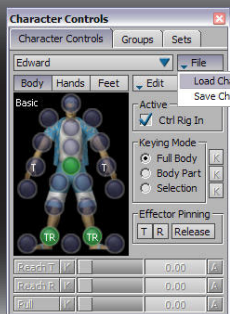
**1** FROM THE ASSET BROWSER GETTINGSTARTED FOLDER, DRAG THE ED\_CHARACTER FILE INTO THE SCENE AND SELECT **FBX OPEN >** NO ANIMATION.



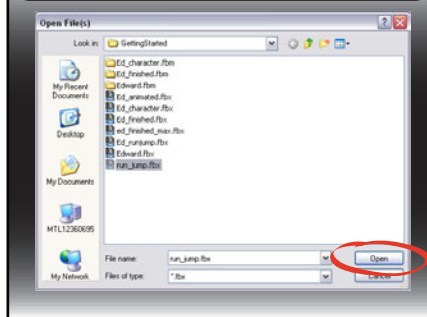
**2** SELECT **EDWARD** IN THE CURRENT CHARACTER MENU.



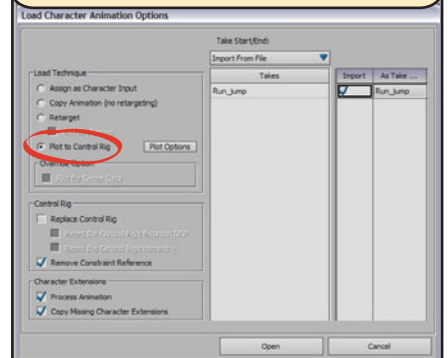
**3** IN THE CHARACTER CONTROLS, SELECT **FILE > LOAD CHARACTER ANIMATION**.



**4** IN THE OPEN FILE DIALOG BOX, SELECT **RUN\_JUMP** FROM THE GETTINGSTARTED DIRECTORY, THEN CLICK **OPEN**.



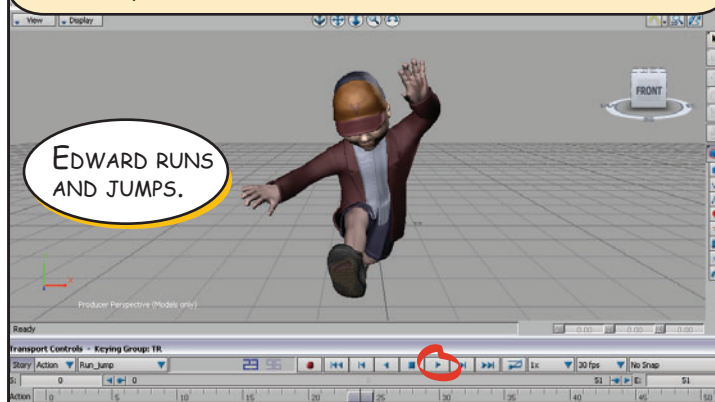
**5** IN THE NEXT DIALOG BOX, ACTIVATE **PLOT TO CONTROL RIG** AND CLICK **OPEN**.



THE ANIMATION FROM THE RUN\_JUMP FILE YOU SELECTED IS PLOTTED ONTO EDWARD'S CONTROL RIG.

IF YOU SELECT ONE OF THE CONTROL RIG EFFECTORS, YOU CAN SEE THAT KEYFRAMES APPEAR IN THE TRANSPORT CONTROLS.

**6** PRESS **CTRL-HOME** TO GO TO THE BEGINNING OF THE TAKE, THEN CLICK **PLAY** TO VIEW THE ANIMATION.



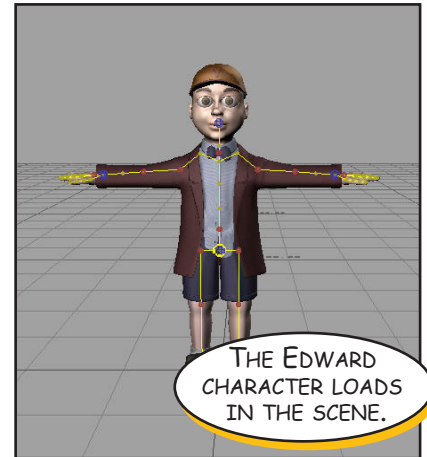
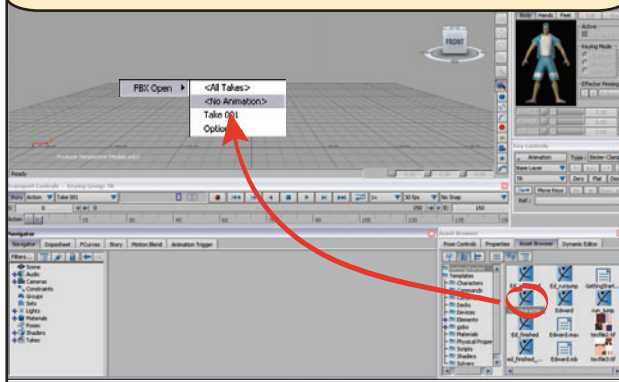
NOW THAT YOU HAVE SOME ANIMATION ON YOUR CHARACTER'S CONTROL RIG, YOU CAN LEARN TO EDIT THAT ANIMATION.

THE END

# KEYFRAMING a CHARACTER

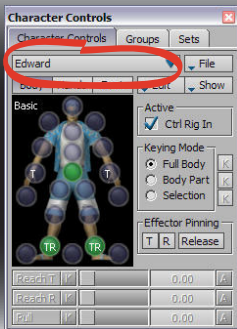
NOW THAT YOU'VE SET UP A CHARACTER IN MOTIONBUILDER, YOU CAN CREATE SOME KEYFRAME ANIMATION USING THE CHARACTER'S CONTROL RIG.

**1** DRAG THE ED\_CHARACTER FILE INTO THE SCENE AND SELECT **FBX OPEN > NO ANIMATION**.

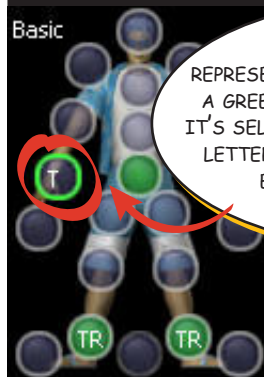


THE EDWARD CHARACTER LOADS IN THE SCENE.

**2** IN THE CHARACTER CONTROLS, SELECT **EDWARD** FROM THE CURRENT CHARACTER MENU.

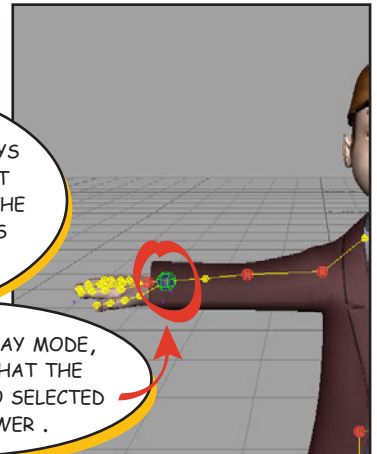


**3** SELECT THE **RIGHT WRIST EFFECTOR**.

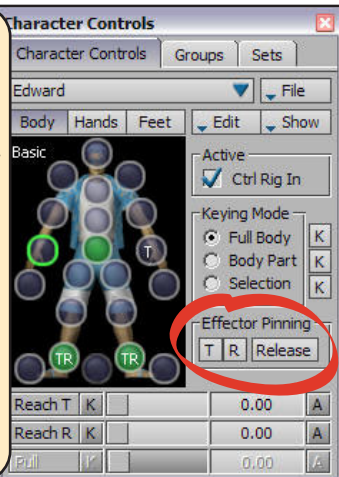


IN THE CHARACTER REPRESENTATION, THE CELL DISPLAYS A GREEN CIRCLE TO INDICATE THAT IT'S SELECTED. IT ALSO DISPLAYS THE LETTER T TO INDICATE THAT THIS EFFECTOR IS PINNED IN TRANSLATION.

IN X-RAY DISPLAY MODE, YOU CAN SEE THAT THE EFFECTOR IS ALSO SELECTED IN THE VIEWER.

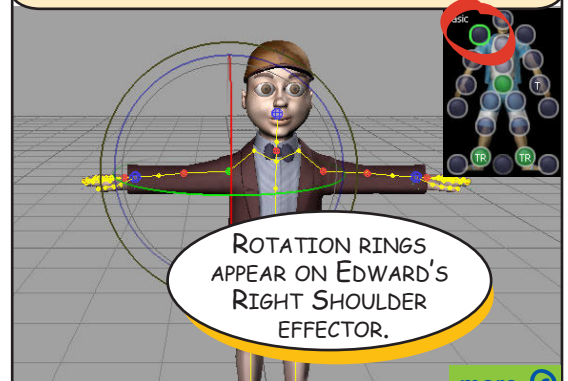


**4** IN THE EFFECTOR PINNING AREA, CLICK THE **T** BUTTON TO DISABLE TRANSLATION PINNING ON THE SELECTED RIGHT WRIST EFFECTOR.



NOW YOU'LL BE ABLE TO TRANSFORM THE WHOLE ARM WITHOUT THE WRIST REMAINING PINNED IN PLACE.

**5** SELECT THE **RIGHT SHOULDER CELL**, CLICK IN THE VIEWER WINDOW AND PRESS **R** TO ACTIVATE ROTATION MODE.

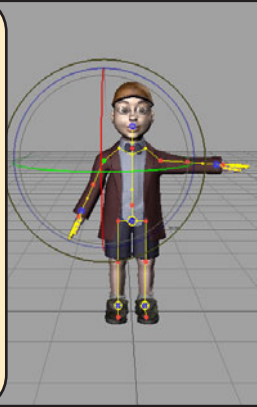


ROTATION RINGS APPEAR ON EDWARD'S RIGHT SHOULDER EFFECTOR.

more

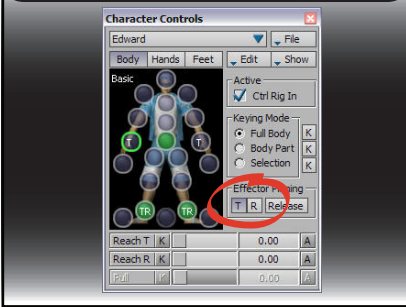
6

DRAG THE BLUE ROTATION RING TO ROTATE THE ARM ALONG THE Z-AXIS, BRINGING IT CLOSE TO THE SIDE OF EDWARD'S BODY.



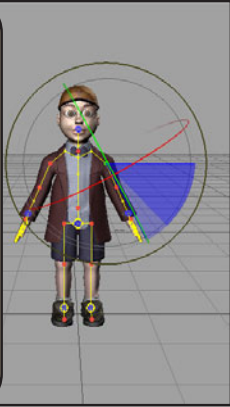
7

RE-ACTIVATE THE TRANSLATION PINNING FOR THE RIGHT WRIST EFFECTOR.



8

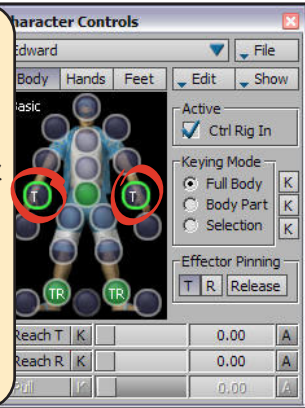
SELECT THE LEFT SHOULDER EFFECTOR, THEN PRESS AND HOLD Q ON THE KEYBOARD AS YOU DRAG THE BLUE ROTATION RING TO ROTATE THE LEFT ARM CLOSER TO THE BODY.



PRESSING Q IS THE SAME AS ACTIVATING THE RELEASE OPTION IN THE EFFECTOR PINNING AREA. IT TEMPORARILY UNPINS EFFECTORS FOR THE SELECTED BODY PART.

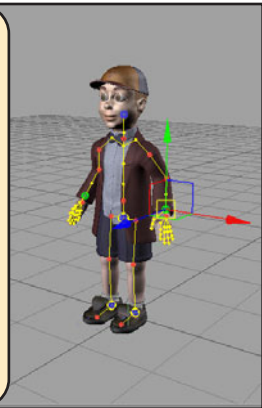
9

DESELECT THE SHOULDER EFFECTOR, THEN CTRL-CLICK TO SELECT BOTH THE LEFT AND RIGHT WRISTS.



10

CLICK IN THE VIEWER WINDOW AND PRESS T TO ACTIVATE TRANSLATION MODE, THEN TRANSLATE THE WRISTS ON THE Y- AND Z-AXES TO CREATE A MORE NATURAL POSITION, WITH A SLIGHT BEND IN THE ELBOW.



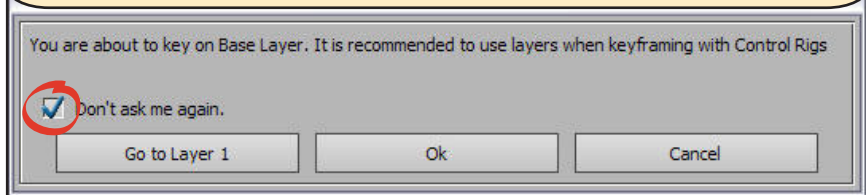
11

AT FRAME ZERO, WITH THE WRISTS STILL SELECTED, CLICK FLAT IN THE KEY CONTROLS TO SET A KEY WITH FLAT TANGENT HANDLES.



12

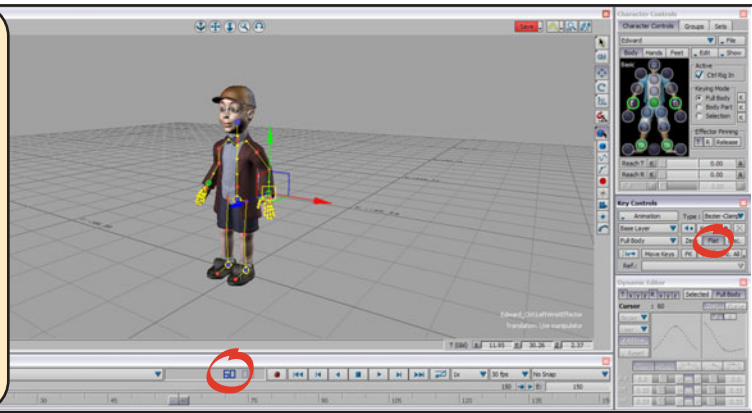
IN THE DIALOG BOX THAT APPEARS, ACTIVATE THE "DON'T ASK ME AGAIN" OPTION AND CLICK OK.



NOTE: SINCE YOU'RE NOT KEYFRAMING ON TOP OF THE ANIMATION, YOU CAN SET KEYFRAMES ON THE BASE LAYER. IF YOU'RE USING THE CONTROL RIG TO EDIT MOTION DATA, KEEP THE ORIGINAL ANIMATION ON THE BASE LAYER, AND CREATE MODIFIED ANIMATION ON LAYER 1 SO YOUR CHANGES DON'T AFFECT THE ORIGINAL.

13

IN THE TRANSPORT CONTROLS, GO TO FRAME 60, THEN SET ANOTHER FLAT KEYFRAME.



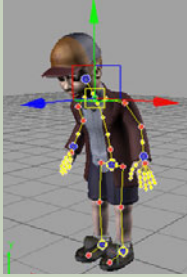
THERE ARE NOW TWO VISUAL KEYFRAMES ON THE TIMELINE. EVEN THOUGH YOU ONLY HAVE THE WRIST EFFECTORS SELECTED, KEYFRAMES ARE SET ON THE WHOLE BODY BECAUSE FULL BODY IS SELECTED AS THE KEYING MODE.

THE ENTIRE CONTROL RIG LIGHTS UP TO SHOW IT IS KEYED AT THE CURRENT TIME.



**14** GO TO **FRAME 30** AND DO THE FOLLOWING:

**A** SELECT THE **CHEST** EFFECTOR AND TRANSLATE EDWARD FORWARD AS IF HE IS LOOKING AT SOMETHING ON THE GROUND.



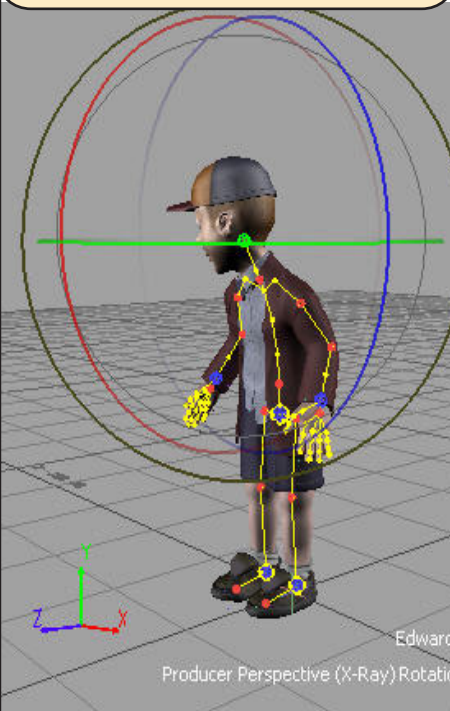
**B** SELECT THE **HEAD** EFFECTOR AND ROTATE THE HEAD DOWNWARD SO EDWARD IS LOOKING CLOSER TO HIS BODY.



**C** SET A **KEYFRAME**. (PRESS **K** OR CLICK **KEY** IN THE KEY CONTROLS.)

CHECK OUT THE **BEST PRACTICES** FOR TIPS ON USING THE **VIEWER WINDOW** TO GET THE **BEST VIEW** OF YOUR **SCENE**.

**15** GO TO **FRAME 45**, ROTATE THE HEAD TO THE RIGHT AS IF EDWARD IS CHECKING OVER HIS SHOULDER, THEN SET A **KEYFRAME**.



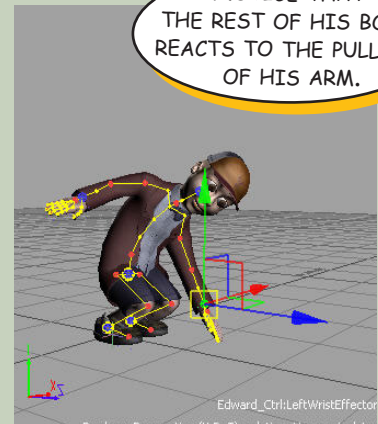
**16** GO TO **FRAME 90** AND DO THE FOLLOWING:

**A** SELECT THE **LEFT WRIST** EFFECTOR AND TRANSLATE THE ARM FORWARD AND DOWN SO THAT EDWARD APPEARS TO REACH FOR SOMETHING ON THE GROUND.

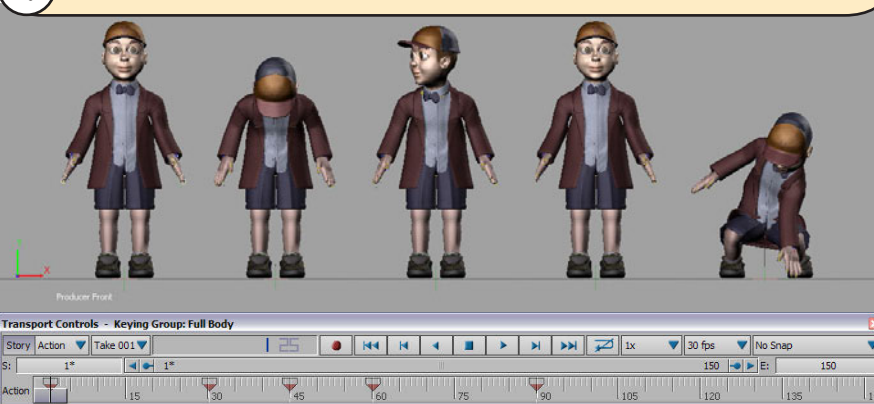
**B** ADJUST EDWARD'S OTHER EFFECTORS UNTIL YOU ARE SATISFIED WITH HIS POSITION. FOR EXAMPLE, YOU MIGHT WANT TO ROTATE HIS HEAD TO KEEP HIS EYES ON THE GROUND, OR ADJUST HIS KNEES TO MAKE A NORMAL BEND.

**C** SET A **FLAT** KEYFRAME.

NOTICE THAT THE REST OF HIS BODY REACTS TO THE PULLING OF HIS ARM.



**17** PLAY YOUR ANIMATION.



THE ANIMATION YOU'VE CREATED HAS FIVE KEYFRAMES, AND THE MOTION CONSISTS OF EDWARD BENDING, TURNING HIS HEAD, AND REACHING FOR SOMETHING ON THE GROUND.

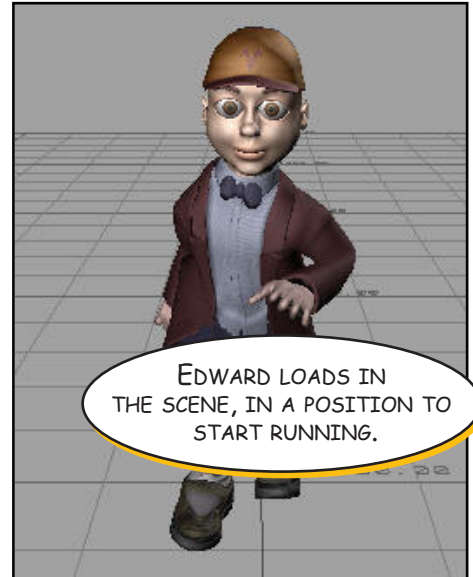
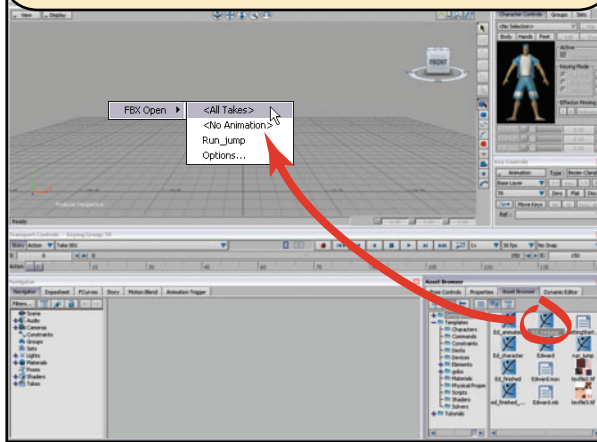
NOW THAT YOU HAVE CREATED SOME KEYFRAME ANIMATION ON YOUR CHARACTER, YOU CAN LEARN TO EDIT ANIMATION.

THE END

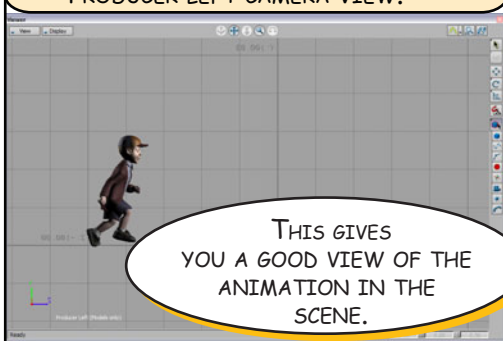
# EDITING CHARACTER ANIMATION

NOW THAT YOU'VE LOADED ANIMATION ON A CHARACTER, OR CREATED YOUR OWN KEYFRAME ANIMATION, YOU CAN EDIT THE ANIMATION ON THE CHARACTER'S CONTROL RIG.

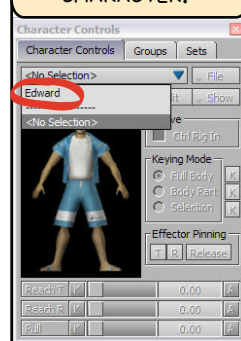
**1** FROM THE ASSET BROWSER GETTING STARTED FOLDER, DRAG THE ED\_RUNJUMP FILE INTO THE SCENE AND SELECT **FBX OPEN > ALL TAKES** FROM THE MENU THAT APPEAR.



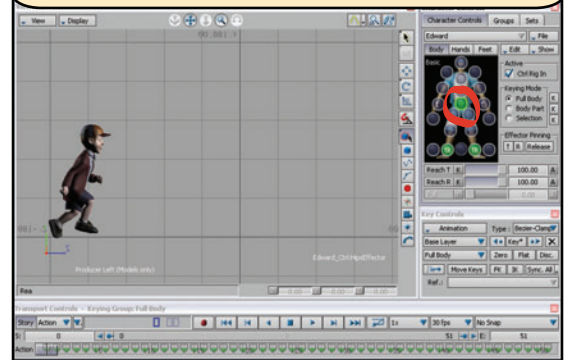
**2** CLICK IN THE VIEWER AND PRESS **CTRL-R** TWICE TO SWITCH TO THE PRODUCER LEFT CAMERA VIEW.



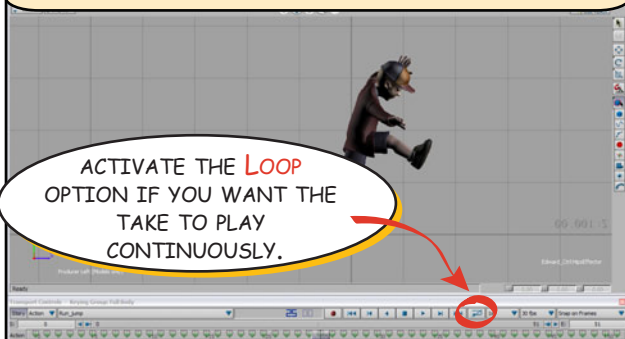
**3** SELECT **EDWARD** AS THE CURRENT CHARACTER.



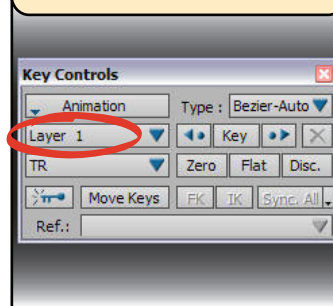
**4** SELECT THE **HIPS** EFFECTOR AND VIEW ITS KEYFRAMES IN THE TRANSPORT CONTROLS.



**5** CLICK **PLAY** AND WATCH THE TAKE TO IDENTIFY WHERE YOU WANT TO EDIT THE ANIMATION.



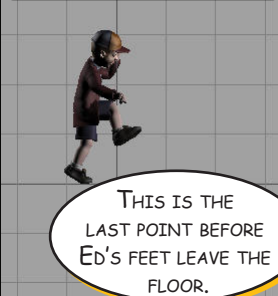
**6** IN THE KEY CONTROLS, SELECT **LAYER 1** FROM THE LAYER MENU.



SETTING KEYFRAMES ON LAYER 1 LETS YOU KEYFRAME ON TOP OF THE ORIGINAL ANIMATION WITHOUT PERMANENTLY CHANGING IT.

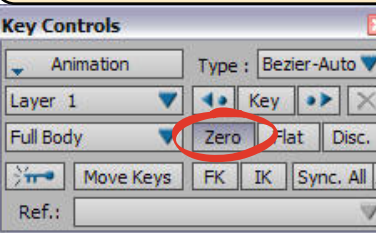
THE ORIGINAL ANIMATION IS KEPT ON THE BASE LAYER, AND IT STAYS THE SAME UNLESS YOU CHOOSE TO MERGE ALL THE LAYERS TOGETHER.

**7** GO TO FRAME 20.




THIS IS THE LAST POINT BEFORE ED'S FEET LEAVE THE FLOOR.

**8** WITH THE HIPS EFFECTOR STILL SELECTED, CLICK **ZERO** IN THE KEY CONTROLS TO SET A ZERO KEY.



IN THE VIEWER, YOU'LL SEE EDWARD'S RIG EFFECTORS HIGHLIGHT TO SHOW THEY ARE KEYED AT THE CURRENT TIME. KEYFRAMES WERE SET ON THE WHOLE BODY BECAUSE FULL BODY IS SELECTED AS THE KEYING MODE IN THE CHARACTER CONTROLS.

**9** GO TO FRAME 35.



HERE, ED'S FEET ARE BACK ON THE FLOOR.


**10** SET ANOTHER **ZERO** KEY.



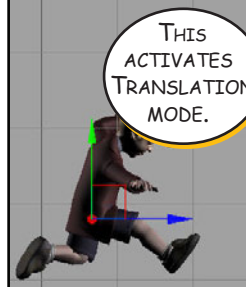
BETWEEN THESE ZERO KEYS, YOU'LL EDIT THE ANIMATION.

SETTING ZERO KEYS ON LAYER 1 CREATES A SET OF 'BRACKETS' AROUND THE ANIMATION YOU INTEND TO CHANGE. THE ANIMATION OUTSIDE THESE 'BRACKETS' IS UNAFFECTED, WHILE THE ANIMATION BETWEEN THEM IS OFFSET FROM THE BASE LAYER.

**11** GO TO FRAME 28, BETWEEN THE TWO ZERO KEYS.




**12** CLICK IN THE VIEWER AND PRESS **T**.




THIS ACTIVATES TRANSLATION MODE.

**13** PRESS AND HOLD **Q** AS YOU TRANSLATE THE HIPS EFFECTOR TO MOVE EDWARD'S BODY HIGHER ON THE Y-AXIS.

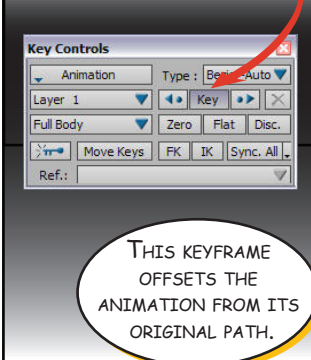


PRESSING Q TEMPORARILY RELEASES THE PINNED HANDS AND FEET.

**14** SELECT EDWARD'S **RIGHT KNEE** EFFECTOR AND TRANSLATE THE RIGHT LEG HIGHER TO CREATE A BIGGER KICK.

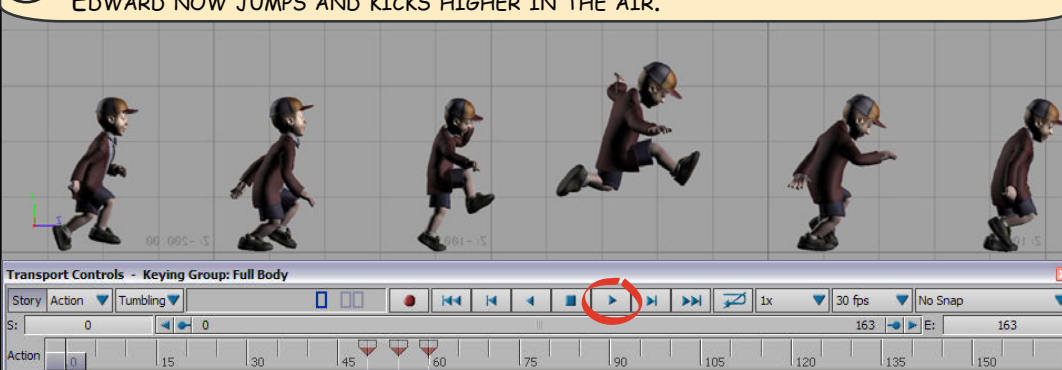


**15** CLICK **KEY** TO SET A REGULAR KEYFRAME.



THIS KEYFRAME OFFSETS THE ANIMATION FROM ITS ORIGINAL PATH.

**16** GO TO THE FIRST FRAME AND PRESS **PLAY** TO VIEW YOUR ANIMATION. NOTICE HOW EDWARD NOW JUMPS AND KICKS HIGHER IN THE AIR.



NOW THAT YOU HAVE EDITED SOME ANIMATION, YOU CAN PREPARE TO EXPORT THIS CHARACTER BACK TO MAYA OR 3DS MAX.

**THE END**

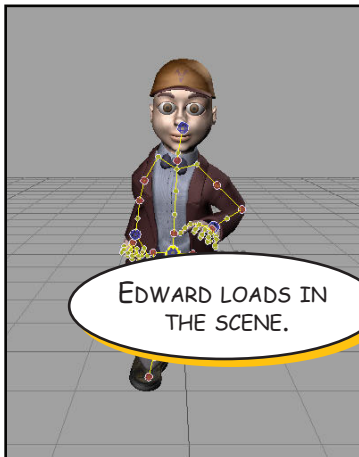
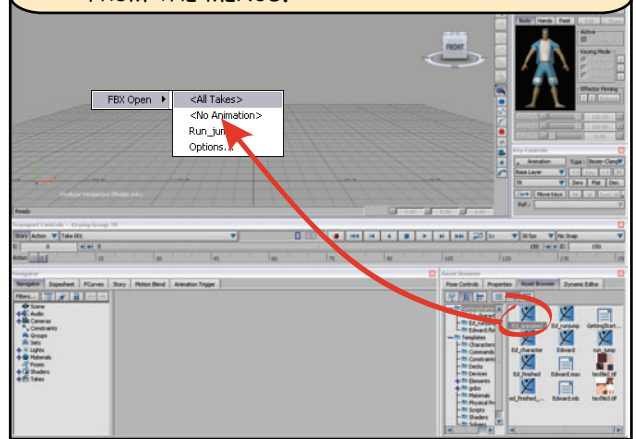
# PREPARING to EXPORT from MotionBuilder

NOW THAT YOU'VE LOADED CHARACTER ANIMATION, KEYFRAMED A CHARACTER, OR EDITED CHARACTER ANIMATION, YOU CAN GET YOUR CHARACTER READY TO BE IMPORTED BACK INTO MAYA OR 3ds MAX.

RIGHT NOW, THE ANIMATION DATA FOR YOUR CHARACTER IS STORED IN ITS CONTROL RIG OBJECTS. WHEN EXPORTING, YOU NEED THE ANIMATION DATA TO BE STORED IN THE BONE OBJECTS THAT MAKE UP YOUR CHARACTER'S SKELETON.

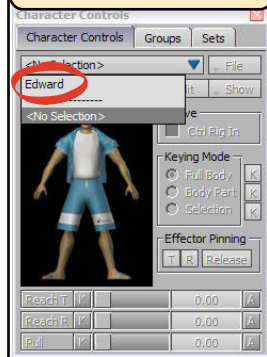
TO GET THE ANIMATION FROM THE EDITABLE CONTROL RIG ONTO THE SKELETON, YOU WILL PLOT, OR "BAKE" THE ANIMATION.

- 1 DRAG THE ED\_ANIMATED FILE INTO THE SCENE AND SELECT **FBX OPEN > ALL TAKES** FROM THE MENU.

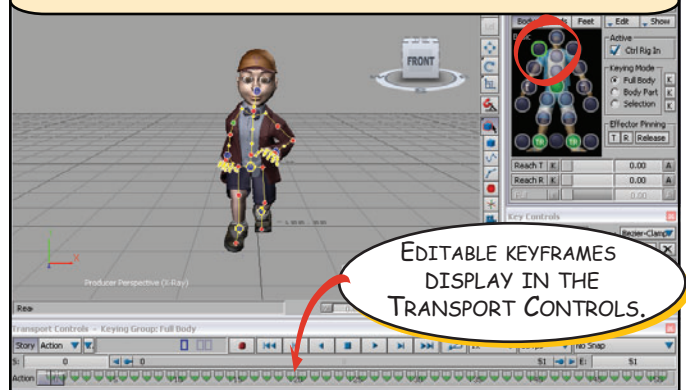


EDWARD LOADS IN THE SCENE.

- 2 SELECT **EDWARD** AS THE CURRENT CHARACTER.

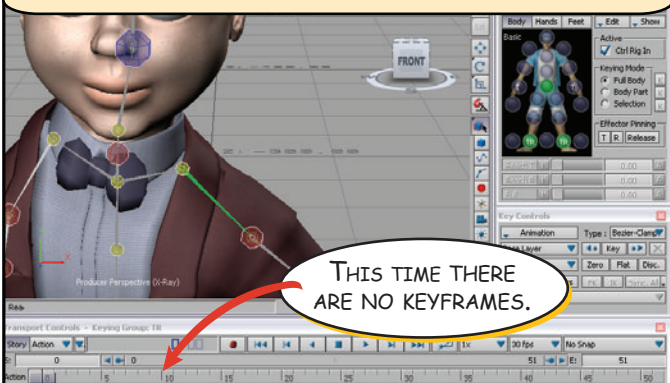


- 3 SELECT A CONTROL RIG EFFECTOR AND LOOK IN THE TRANSPORT CONTROLS TO VIEW ITS KEYFRAMES.



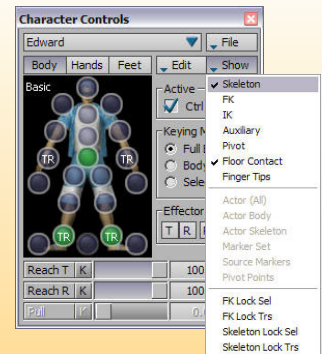
EDITABLE KEYFRAMES DISPLAY IN THE TRANSPORT CONTROLS.

- 4 ZOOM IN TO SELECT ONE OF EDWARD'S BONES AND LOOK AT THE TRANSPORT CONTROLS AGAIN.



THIS TIME THERE ARE NO KEYFRAMES.

REMEMBER, YOU CAN USE THE SHOW MENU IN THE CHARACTER CONTROLS TO SHOW AND HIDE ANYTHING THAT DISPLAYS ON YOUR CHARACTER, SUCH AS THE CONTROL RIG EFFECTORS AND THE SKELETON.

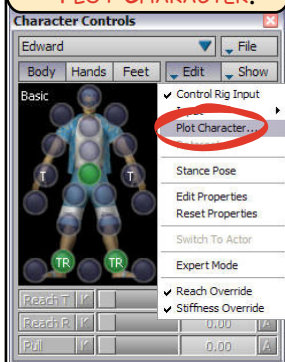


more

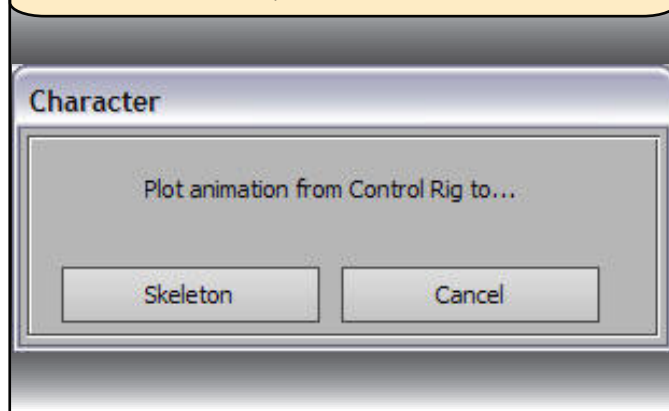
IN THE NEXT STEPS, YOU WILL PLOT THE ANIMATION FROM THE CONTROL RIG TO THE SKELETON.

ONCE THE ANIMATION IS TRANSFERRED, IT CANNOT BE EDITED. IF YOU NEED TO EDIT THE ANIMATION LATER, PLOT IT BACK TO THE CONTROL RIG.

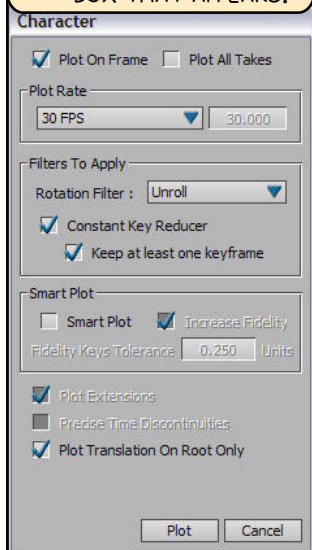
**5** IN THE CHARACTER CONTROLS EDIT MENU, SELECT **PLOT CHARACTER**.



**6** IN THE CHARACTER DIALOG BOX THAT APPEARS, CLICK **SKELETON**.



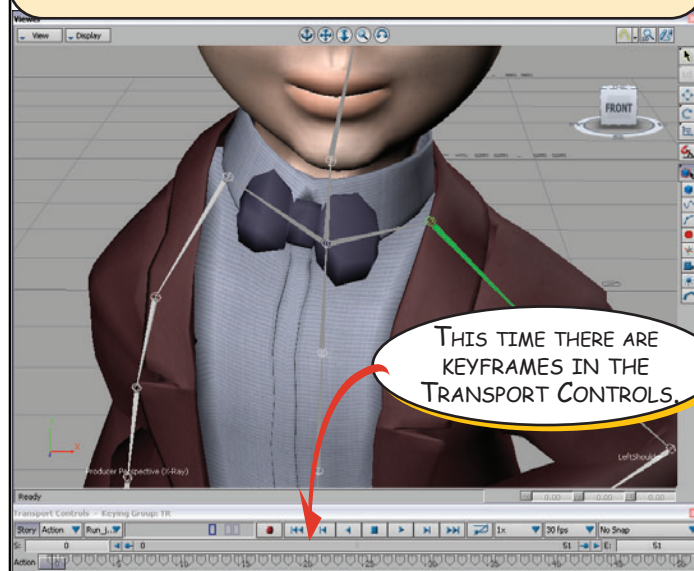
**7** KEEP THE DEFAULT OPTIONS AND CLICK **PLOT** IN THE DIALOG BOX THAT APPEARS.



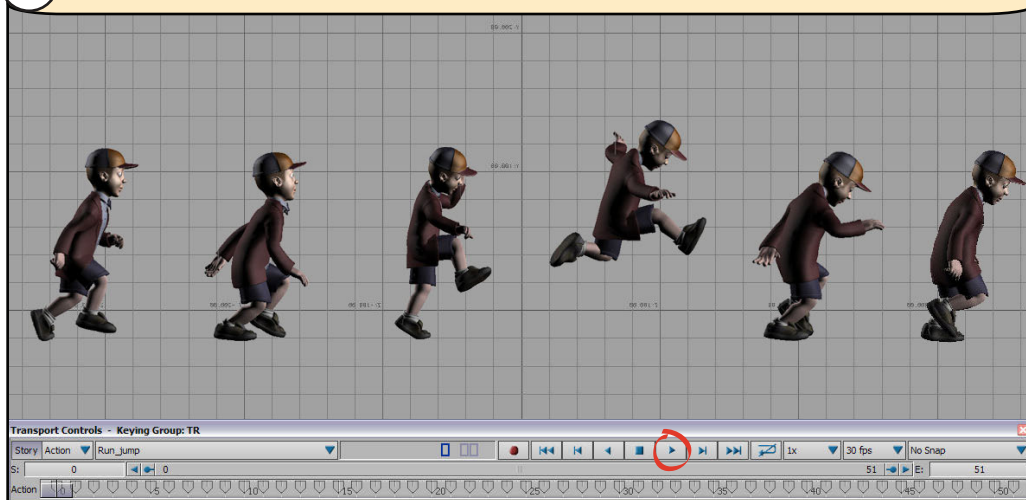
THE ANIMATION IS TRANSFERRED TO THE SKELETON OBJECTS.

THE CONTROL RIG IS STILL AVAILABLE IN YOUR SCENE, BUT IT IS NO LONGER THE ACTIVE MOTION SOURCE FOR YOUR CHARACTER. IT IS HIDDEN IN THE VIEWER WINDOW, BUT YOU CAN STILL SEE IT LISTED IN THE SCENE BROWSER, AND YOU CAN STILL SELECT IT AS A MOTION SOURCE.

**8** TO VERIFY THAT THE ANIMATION HAS BEEN TRANSFERRED TO EDWARD'S SKELETON, SELECT ONE OF HIS BONES IN THE VIEWER WINDOW.



**9** CLICK **PLAY** TO VIEW THE ANIMATION.



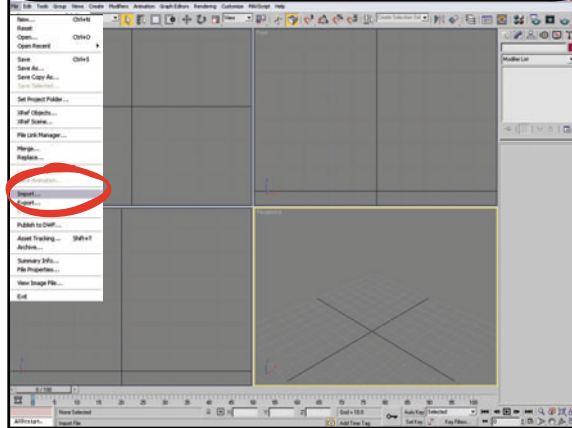
NOW THAT YOU'VE PLOTTED THE ANIMATION TO EDWARD'S SKELETON, YOU CAN IMPORT HIM BACK INTO MAYA OR 3DS MAX.

THE END

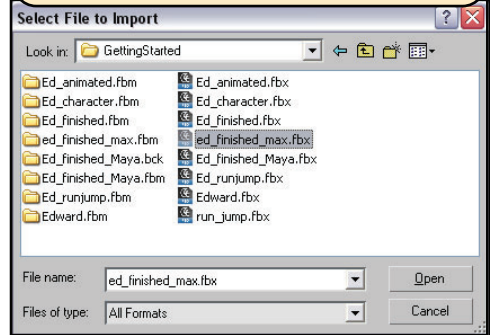
# IMPORTING from MOTIONBUILDER Into 3ds Max

NOW THAT YOU'VE PREPARED YOUR SCENE, YOU CAN IMPORT IT FROM MOTIONBUILDER BACK INTO 3DS MAX.

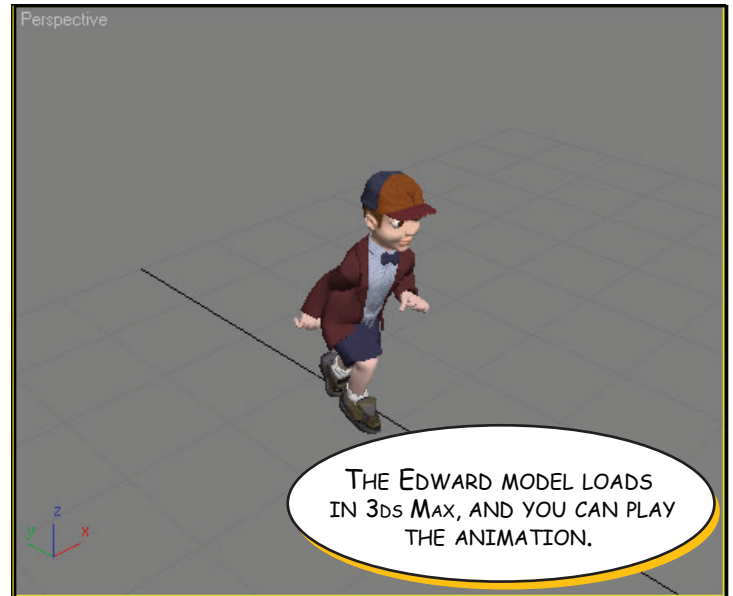
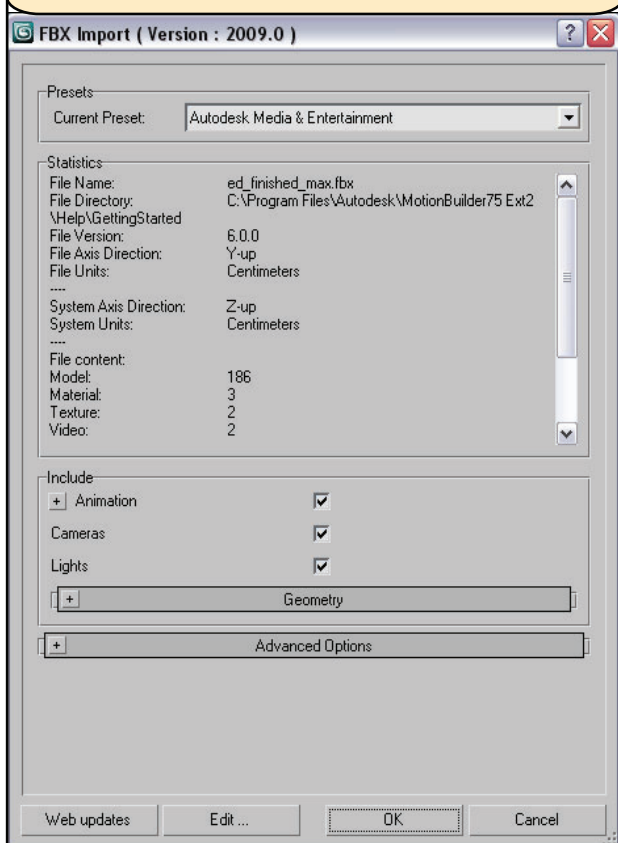
- 1 START 3DS MAX AND SELECT **FILE > IMPORT** FROM THE MENU BAR.



- 2 IN THE IMPORT WINDOW, SELECT **FBX** AS THE FILE TYPE, NAVIGATE TO SELECT THE **ED\_FINISHED\_MAX** FILE, AND CLICK **OPEN**.



- 3 CLICK **OK** IN THE FBX IMPORTER THAT APPEARS.



**YOU'VE FINISHED!**

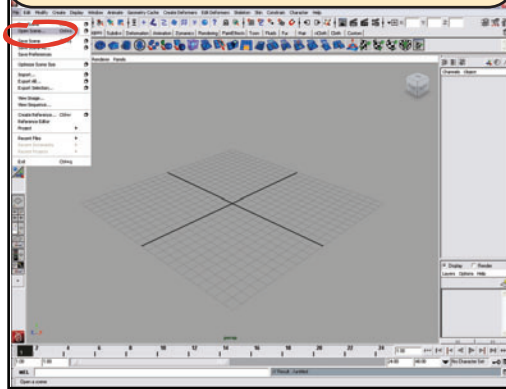
DON'T FORGET TO CHECK OUT THE BEST PRACTICES TO HELP YOU ALONG AS YOU START TO WORK WITH YOUR OWN SCENES.

THE END

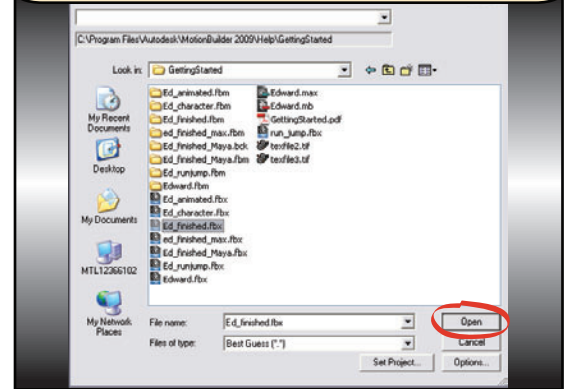
# IMPORTING from MOTIONBUILDER Into Maya

AFTER YOU'VE PREPARED YOUR SCENE, YOU CAN IMPORT IT FROM MOTIONBUILDER BACK INTO MAYA.

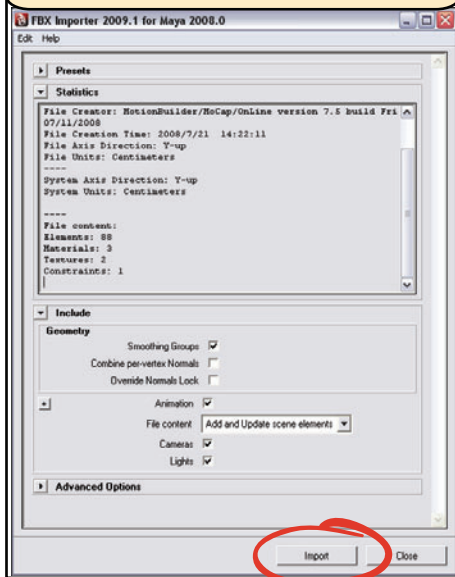
1 START MAYA AND SELECT **FILE > OPEN SCENE** FROM THE MENU BAR.



2 IN THE OPEN FILE WINDOW, SELECT THE **ED\_FINISHED.FBX** FILE AND CLICK **OPEN**.



3 IN THE FBX IMPORTER, CLICK **IMPORT**.



WHEN YOU LOAD A MOTIONBUILDER FILE IN MAYA, YOU MAY NOTICE A DIFFERENCE IN THE SCALING OF YOUR CHARACTER.

FOR MORE INFORMATION ON SCALING CHARACTERS BETWEEN MAYA AND MOTIONBUILDER, SEE THE [BEST PRACTICES](#).

YOU'VE FINISHED!

DON'T FORGET TO CHECK OUT THE [BEST PRACTICES](#) TO HELP YOU ALONG AS YOU START TO WORK WITH YOUR OWN FILES.

THE END

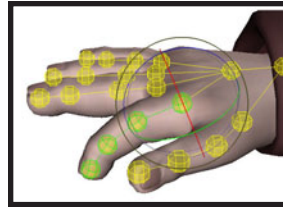
# BEST PRACTICES

THESE TIPS AND TRICKS ARE DESIGNED TO HELP YOU WORK BETTER AND FASTER WITH MOTIONBUILDER, MAYA, AND 3DS MAX IN YOUR 3D ANIMATION PIPELINE.

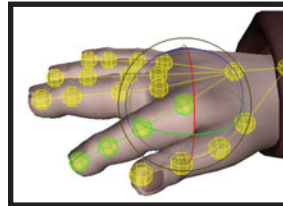
## MANIPULATING SPINES & FINGERS

WHEN ROTATING OBJECTS IN A SINGLE CONTINUOUS HIERARCHY, SUCH AS OBJECTS IN THE FINGERS OR SPINE, SWITCH TO LOCAL REFERENCE MODE IN THE VIEWER WINDOW BEFORE YOU SELECT THE FK EFFECTORS.

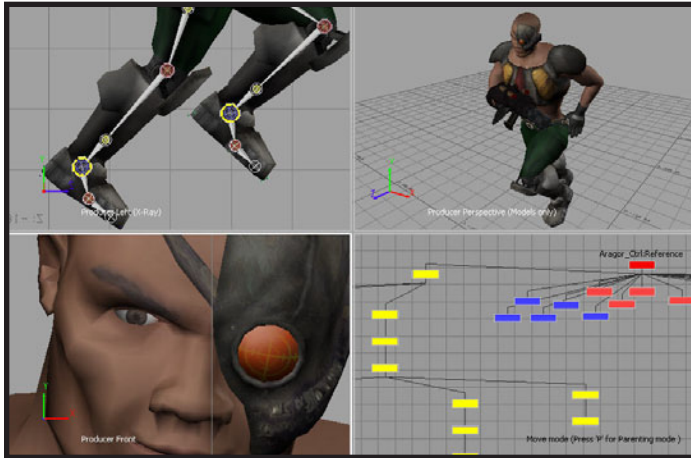
THIS MODE GIVES YOU ADDITIVE ROTATION BEHAVIOR, SO THAT EACH BONE ROTATES RELATIVE TO ITS PARENT. THE FINGER OR SPINE BENDS NATURALLY AS YOU ROTATE THE EFFECTORS.



ROTATION WITH LOCAL REFERENCE MODE SELECTED.



ROTATION WITH GLOBAL REFERENCE MODE SELECTED.



## THE VIEWER WINDOW

TRY OUT THE VARIOUS SHORTCUTS THAT LET YOU QUICKLY SPLIT THE VIEW AND SEE FROM DIFFERENT CAMERA VIEWS IN THE VIEWER WINDOW. LOOK IN THE VIEW AND DISPLAY MENUS FOR MORE OPTIONS.

PRESSING 'A' FRAMES ALL OBJECTS.

CTRL-A CYCLES BETWEEN X-RAY, MODELS ONLY, AND NORMAL VIEWS.

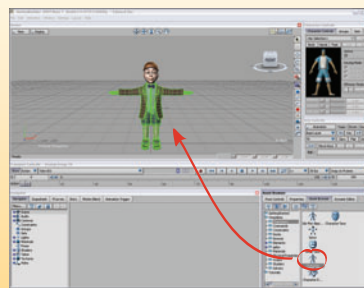
CTRL-1-4 SPLITS THE VIEWER WINDOW INTO DIFFERENT PANES.

## AUTOMATIC CHARACTERIZATION

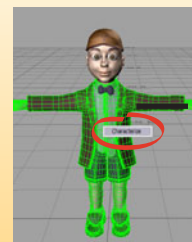
IF THE NAMES OF YOUR CHARACTER'S BONE OBJECTS MATCH THE NAMES IN THE MOTIONBUILDER MAPPING LIST, YOU CAN COMPLETE THE CHARACTER MAPPING PROCESS AND CHARACTERIZE YOUR CHARACTER AUTOMATICALLY.

YOU CAN ALSO USE THE EXTRACT NAMING TEMPLATE BUTTON TO MAKE YOUR OWN TEMPLATE OF BONE NAMING CONVENTIONS.

DRAW THE CHARACTER ASSET DIRECTLY ONTO YOUR CHARACTER.



SELECT THE CHARACTERIZE OPTION THAT APPEARS.



THE MAPPING OF YOUR CHARACTER'S STRUCTURE IS COMPLETED AUTOMATICALLY, AND THE CHARACTER IS CHARACTERIZED.

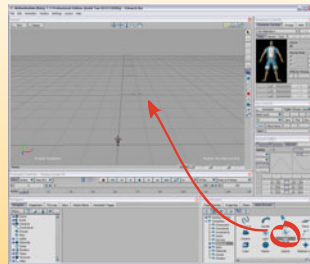
more @

## SCALE OBJECTS IMPORTED FROM MAYA

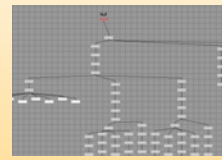
WHEN YOU IMPORT MODELS FROM MAYA, THEY MAY APPEAR SMALLER THAN YOU EXPECTED. IF YOU PREFER TO WORK WITH A LARGER MODEL, YOU CAN USE A NULL TO TEMPORARILY SCALE THE WHOLE MODEL.

WHEN YOU'RE READY TO BRING THE MODEL BACK INTO MAYA, JUST DELETE THE NULL, THEN EXPORT THE SCENE. THE CHARACTER WILL LOAD AT ITS ORIGINAL SIZE IN MAYA.

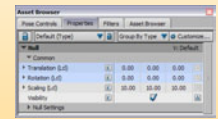
DRAW A NULL OBJECT INTO THE SCENE WITH YOUR CHARACTER.



PARENT YOUR CHARACTER'S ENTIRE HIERARCHY TO THE NULL OBJECT.



SCALE THE NULL UNTIL YOUR CHARACTER IS AN APPROPRIATE SIZE.

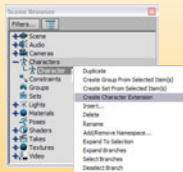


## BUILD CHARACTER EXTENSIONS

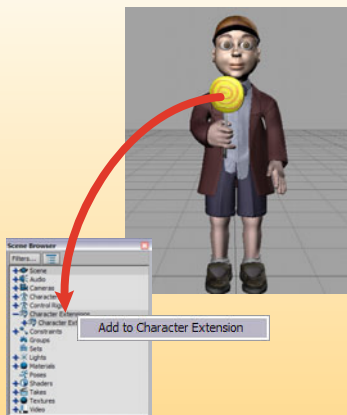
USE CHARACTER EXTENSIONS TO ADD PROP OBJECTS AND ADDITIONAL LIMBS TO YOUR CHARACTER'S CONTROL RIG.

ANY OBJECT OR SETTING ADDED TO YOUR CHARACTER AS A CHARACTER EXTENSION IS KEYED AUTOMATICALLY ANY TIME YOU SET A KEY ON YOUR CHARACTER.

RIGHT-CLICK YOUR CHARACTER IN THE SCENE BROWSER AND SELECT **CREATE CHARACTER EXTENSION**.



DROP A PROP OBJECT ONTO THE EXTENSION, AND CLICK **ADD TO CHARACTER EXTENSION**.



## TRIM INSIGNIFICANT WEIGHTS (IN MAYA)

BEFORE EXPORTING SCENES FROM MAYA TO MOTIONBUILDER, YOU CAN TRIM INSIGNIFICANT WEIGHTS ON DEFORMED MODELS TO SPEED UP THE FLOW OF DATA.

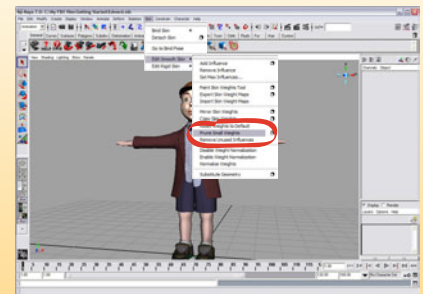
## CUSTOMIZE CONTROL RIGS

SELECT A CONTROL RIG IN THE SCENE BROWSER, THEN USE THE PROPERTIES WINDOW TO CUSTOMIZE THE LOOK OF THE IK AND FK EFFECTORS.

CLICK THE **SOLID LOOK** OPTION TO WORK WITH FK EFFECTORS LIKE SOLID BONE-TYPE OBJECTS.



SELECT THE MAYA **SKIN > EDIT SMOOTH SKIN > PRUNE SMALL WEIGHTS** OPTION.



## USE FAMILIAR KEYBOARD SHORTCUTS

CHOOSE **SETTINGS > KEYBOARD CONFIGURATION** FROM THE MOTIONBUILDER MENU BAR TO SELECT THE KEYBOARD SHORTCUTS THAT YOU WANT TO USE.

YOU CAN SELECT FROM SETS OF SHORTCUTS THAT GO WITH 3DS MAX, LIGHTWAVE, MAYA, AND XSI.

## EXPERIMENT WITH SAMPLE MOTION FILES

IF YOU WANT TO EXPERIMENT WITH DIFFERENT TYPES OF MOTION FILES IN MOTIONBUILDER, YOU'LL FIND SOME SAMPLE FILES ON THE CLIP ART DVD IN YOUR MOTIONBUILDER PACKAGE.

THE END

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