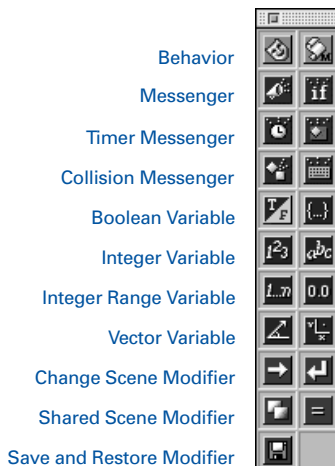




Quick Reference Guide

Modifiers

Logic Palette



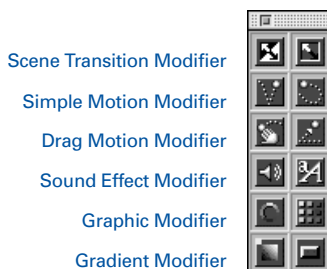
Miniscript Modifier
If Messenger
Boundary Detection Msg
Keyboard Messenger
Compound Variable
String Variable
Floating-Point Variable
Point Variable
Return Modifier
Set Modifier

Extras Palette



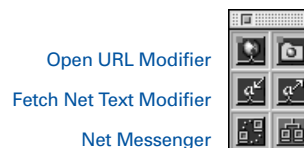
Panorama Messenger
Cursor Modifier
Sound Fade Modifier
Point Motion Modifier
Object Reference Variable
Navigation Modifier
Open Application Modifier
Window Prefs Modifier

Effects Palette



Element Transition Modifier
Path Motion Modifier
Vector Motion Modifier
Text Style Modifier
Color Table Modifier
Image Effect Modifier

Network Palette



Cache URL Modifier
Post Net Text Modifier
Net Messaging Service

Shortcuts

Standard Shortcut	Action
Shift-Click	Select or deselect multiple items
Option-Drag	Copy the selected item(s)
Double-Click	Open info/configuration dialog

Layout Shortcut [†]	Action
Up Arrow	Move selected element(s) up one pixel
Down Arrow	Move selected element(s) down one pixel
Left Arrow	Move selected element(s) left one pixel
Right Arrow	Move selected element(s) right one pixel
Option-Up Arrow [‡]	Reduce height of selected element(s) by one pixel (from bottom)
Option-Down Arrow [‡]	Reduce height of selected element(s) by one pixel (from top)
Option-Left Arrow [‡]	Reduce width of selected element(s) by one pixel (from right)
Option-Right Arrow [‡]	Reduce width of selected element(s) by one pixel (from left)
⌘-Up Arrow [‡]	Increase height of selected element(s) by one pixel (from top)
⌘-Down Arrow [‡]	Increase height of selected element(s) by one pixel (from bottom)
⌘-Left Arrow [‡]	Increase width of selected element(s) by one pixel (from left)
⌘-Right Arrow [‡]	Increase width of selected element(s) by one pixel (from right)
Control-Up Arrow	Move crop region of selected element(s) up one pixel
Control-Down Arrow	Move crop region of selected element(s) down one pixel
Control-Left Arrow	Move crop region of selected element(s) left one pixel
Control-Right Arrow	Move crop region of selected element(s) right one pixel
⌘-Click text element	Edit element's text

Resizing Shortcut	Action
Shift	Maintain aspect ratio
Control	Resize around center
Shift-Control	Resize around center and maintain aspect ratio
Option	Resize in even multiples of current size
Option-Control	Resize around center in even multiples of current size

Cropping Shortcut	Action
Shift	Add new area to existing crop region
Option	Allow dragging outside current crop region to reveal new area
Control-Drag border	Resize crop area around center

[†] Add Shift to any Layout Shortcut to use 10-pixel increments instead of 1-pixel increments.

[‡] Add Control to this Layout Shortcut to crop/uncrop the selected element(s) instead of scaling.

Shortcuts

Structure Shortcut	Action
Down Arrow or Tab	Move selection to next item in hierarchy
Up Arrow or Shift-Tab	Move selection to previous item in hierarchy
⌘-Up Arrow	Move selected item(s) up one position in the messaging order
⌘-Down Arrow	Move selected item(s) down one position in the messaging order
⌘-Option-Up Arrow	Display the next level above the current selection
⌘-Shift-Option-Up Arrow	Display all levels above the current selection
⌘-Option-Down Arrow	Display only current selection
⌘-Right Arrow or Click closed triangle	Expand selection (open triangle)
⌘-Option-Right Arrow or Option-Click triangle	Expand entire hierarchy below selection
⌘-Left Arrow or Click open triangle	Collapse selection (close triangle)
⌘-Option-Left Arrow or Option-Click triangle	Collapse entire hierarchy below selection
Option-Click logging indicator	Change the state of the clicked indicator, and change the state of all indicators at lower, open structure levels to match

Asset Palette Shortcut	Action
Shift-Double-Click asset	Open asset info dialog
Option-Double-Click asset	Open asset in editing application (by file type)

Other Shortcut	Action
⌘-. (period)	Stop running project at current scene (⌘-T and ⌘-Y return to starting scene)
⌘-0 (zero)	Open/Close all modifier palettes
⌘-H	Hide/Show all open tools (from Tools menu)

Messages & Commands

Mouse Message	Destination	Incoming Data
Mouse Down	Element	mouse position
Mouse Up	Element	mouse position
Mouse Up Inside	Element	mouse position
Mouse Up Outside	Element	mouse position
Mouse Over	Element	mouse position
Mouse Outside	Element	mouse position
Mouse Tracking	Element	mouse position
Tracked Mouse Outside	Element	mouse position
Tracked Mouse Back Inside	Element	mouse position

Element Message/Command	Destination	With Data
Shown/ <i>Show</i>	Element	none
Hidden/ <i>Hide</i>	Element	none
Selected/ <i>Select</i>	Element	none
Deselected/ <i>Deselect</i>	Element	none
<i>Toggle Select</i>	Element	none
<i>Scroll Up</i>	Element	number of pixels (default 20)
<i>Scroll Down</i>	Element	number of pixels (default 20)
<i>Scroll Left</i>	Element	number of pixels (default 20)
<i>Scroll Right</i>	Element	number of pixels (default 20)
<i>Preload Media</i>	mToon™, QuickTime, Sound Element	range or cel/timevalue
<i>Flush Media</i>	mToon, QuickTime, Sound Element	none
<i>Preroll Media</i>	mToon, QuickTime, Sound Element	none
Trickle Load Done/ <i>Trickle Load Media</i>	mToon, QuickTime, Sound Element	range or cel/timevalue

Text Message/Command	Destination	With Data
<i>Enable Editing</i>	Text Element	none
Edit Done/ <i>Disable Editing</i>	Text Element	none
<i>Update Calculated Fields</i>	Text Element	none

Messages & Commands

Play Control Message/Command	Destination	With Data
Played/ <i>Play</i>	Element	range or sound marker
Stopped/ <i>Stop</i>	Element	none
Paused/ <i>Pause</i>	Element	none
Unpaused/ <i>Unpause</i>	Element	none
<i>Toggle Pause</i>	Element	none
At First Cel	Element	none
At Last Cel	Element	none

Motion/Transition Message	Destination	Incoming Data
Motion Started	Motion Modifier's Parent	none
Motion Ended	Motion Modifier's Parent	none
Transition Started	Transition Modifier's Parent	none
Transition Ended	Transition Modifier's Parent	none
Scene Transition Ended	Scene	none

Object Message/Command	Destination	Incoming Data
Cloned/ <i>Clone</i>	Element	none
Killed/ <i>Kill</i>	Element	none
Do	Targeted Object (by list, <i>forAllDo</i>)	list item

Parent Message	Destination	Incoming Data
Parent Enabled	Element	none
Parent Disabled	Element	none
Parent Changed	Element	none

Scene Message	Destination	Incoming Data
Scene Started	Scene	none
Scene Ended	Scene	none
Scene Deactivated	Scene	none
Scene Reactivateed	Scene	none

Messages & Commands

Shared Scene Message	Destination	Incoming Data
Returned To Scene	Shared Scene	none
Scene Changed	Shared Scene	none
No Next Scene	Shared Scene	none
No Previous Scene	Shared Scene	none
Plug-in Received Focus	Shared Scene	none
Plug-in Lost Focus	Shared Scene	none

Project Message/Command	Destination	With Data
<i>Close Project</i>	Project	none
User Timeout	Shared Scene & Active Scene	none
Project Started	Project	none
Project Ended	Project	none
<i>Flush All Media</i>	Project	maximum <i>flushPriority</i>

Modifiers Message	Destination	Incoming Data
Open Application Failed	Modifier's Parent	none
Network Failed	Net Messaging Service's Parent	none
Host Name Found	Modifier's Parent	host address
Host Name Not Found	Modifier's Parent	host name
Connection Opened	Net Messaging Service's Parent	host address
Connection Closed	Net Messaging Service's Parent	host address
Connection Timed Out	Modifier's Parent	host address
Max Connections Exceeded	Modifier's Parent	none
Net Operation Completed	Modifier's Parent	none
Net Operation Failed	Modifier's Parent	none
Net Operation Stopped	Modifier's Parent	none

Attribute Command	Destination	With Data
<i>Set Attribute</i>	Element	new value
<i>Get Attribute</i>	Element	variable

Object Attributes

Visual Element Attribute	Type	Get	Set
cache	Boolean	•	•
centerPosition	Point	•	•
cropPosition	Point	•	•
cropSize	Point	•	•
direct	Boolean	•	•
globalPosition	Point	•	•
height	Integer	•	•
layer	Integer	•	•
mediaSize	Point	•	
position	Point	•	•
redraw	Boolean		•
scaledSize	Point	•	•
scrollOffset	Point	•	•
size	Point	•	•
visible	Boolean	•	•
width	Integer	•	•

mToon Element Attribute	Type	Get	Set
cel	Integer	•	•
celCount	Integer	•	
loop	Boolean	•	•
maintainRate	Boolean	•	•
paused	Boolean	•	•
range	Range	•	•
rate	Integer	•	•
regPoint	Point	•	

QuickTime Element Attribute	Type	Get	Set
balance	Integer	•	•
controllerClick	Boolean	•	•
duration	Integer	•	
loop	Boolean	•	•
loopBackForth	Boolean	•	•
movieClick	Boolean	•	•
paused	Boolean	•	•
playEveryFrame	Boolean	•	•
range	Range	•	•
rate	Integer/Float	•	•
showController	Boolean	•	•
timeScale	Integer	•	
timeValue	Integer	•	•
trackCount	Integer	•	
trackDisable	Integer/String		•
trackEnable	Integer/String		•
volume	Integer	•	•

QuickTime VR Element Attribute	Type	Get	Set
currentHotspot	Integer	•	
currentNodeName	String	•	
fov	Float	•	•
hotspotName[n]	String	•	
movieClick	Boolean	•	•
node	Integer	•	•
pan	Float	•	•
showController	Boolean	•	•
showCursor	Boolean	•	•
startTransition	Boolean		•
staticSmoothing	String	•	•
tilt	Float	•	•
transitionSpeed	Integer	•	•
updateMode	String	•	•
warpMode	String	•	•

Object Attributes

Text Element Attribute	Type	Get	Set
append	String		•
clickedLine	Integer	•	
editable	Boolean	•	•
length	Integer	•	
line[n]	String	•	•
lineCount	Integer	•	
lineHeight	Integer	•	
lineLength[n]	Integer	•	
text	String	•	•
textHeight	Integer	•	

Sound Element Attribute	Type	Get	Set
balance	Integer	•	•
loop	Boolean	•	•
paused	Boolean	•	•
volume	Integer	•	•

Scene Attribute	Type	Get	Set
load	Boolean		•
unload	Boolean		•

Project Attribute	Type	Get	Set
allowQuitKey	Boolean		•
close	Boolean		•
parameterCount	Integer	•	
parameterName[n]	String	•	
parameterValue[n]	String	•	
playerEmulation [‡]	Boolean	•	•
running [‡]	Boolean/Object	•	•
runningInWindow [‡]	Boolean/Object	•	•
save [‡]	Boolean		•
saveAs [‡]	String		•
selection[n] [‡]	Object	•	•
selectionCount [‡]	Integer	•	
userTimeOut	Integer	•	•
windowMaxSize [†]	Point	•	•
windowMinSize [†]	Point	•	•
windowPosition [†]	Point	•	•
windowSize [†]	Point	•	•
windowStyle [‡]	String		•
windowTitle [‡]	String	•	•
visible [†]	Boolean	•	•

[†] This attribute is supported on Macintosh systems only.

[‡] This attribute is supported in the mTropolis editor only, not in players or plug-ins.

Object Attributes

World Manager Attribute	Type	Get	Set
autoResetCursor	Boolean	•	•
autoScreenFade	Boolean		•
autoSharedScene	Boolean		•
clearReturnList	Boolean		•
clickCount	Integer	•	
cloneNotify	String		•
combineRedraws	Boolean	•	•
currentScene	Object	•	•
cursorElement	Object/String		•
cursorHotspot	Point		•
globalOffset	Point	•	•
macSndBufferSize [†]	Integer	•	•
postponeRedraws	Boolean		•
refreshCursor	Boolean		•
sceneCount	Integer	•	
sharedElemCount	Integer	•	
sharedElement[n]	Object	•	
sharedScene	Object	•	•
winSndBufferSize	Integer	•	•

System Attribute	Type	Get	Set
activeProject [‡]	Object	•	
altKeyDown	Boolean	•	
bytesFree	Integer	•	
commandKeyDown [†]	Boolean	•	
controlKeyDown	Boolean	•	
ejectCD	Boolean		•
elementCount	Integer	•	
gameMode [†]	Boolean		•
initialBytesFree	Integer	•	
lockCD	Boolean		•
masterVolume	Integer	•	•
memErrorCount	Integer	•	•
modifierCount	Integer	•	
monitorBitDepth [‡]	Integer	•	•
newProject [‡]	Boolean		•
open [‡]	String		•
optionKeyDown	Boolean	•	
playerType	String	•	
project[n]	Object	•	
projectCount	Integer	•	
shiftKeyDown	Boolean	•	
supportsBitDepth[n] [†]	Boolean	•	
volumeIsMounted	Boolean	•	
volumeName	String		•

[†] This attribute is supported on Macintosh systems only.

[‡] This attribute is supported in the mTropolis editor only, not in players or plug-ins.

Object Attributes

System Time Attribute	Type	Get	Set
abbreviatedDate	String	•	
date	String	•	
day	Integer	•	
dayInWeek	Integer	•	
dayInYear	Integer	•	
hours	Integer	•	
longDate	String	•	
longTime	String	•	
minutes	Integer	•	
month	Integer	•	
numericDate	Integer	•	
numericTime	Float	•	
seconds	Integer	•	
ticks	Float	•	
time	String	•	
year	Integer	•	

Any Object Attribute	Type	Get	Set
classID	String	•	
classType	String	•	
clone	Boolean/ Object/String		•
fullPath	String	•	
kill	Boolean		•
name	String	•	•
objectID	Integer	•	
openEditDialog [‡]	Boolean		•
path	String	•	

Any Element Attribute	Type	Get	Set
asset	Object/String	•	•
flushPriority	Integer		•
shared	Boolean	•	•
preloaded	Boolean	•	

Any Asset Attribute	Type	Get	Set
flush	Boolean		•
preload	Boolean		•
preloaded	Boolean	•	

Asset Manager Attribute	Type	Get	Set
asset[n]	Object	•	
bytesLoaded	Integer	•	
count	Integer	•	
flushAll	Integer		•
loadedCount	Integer	•	
trickleEnabled	Boolean	•	•
trickleReadSize	Integer	•	•

Structure Attribute (Any Object)	Type	Get	Set
childElem[n]	Object	•	
childElemCount	Integer	•	
childIndex	Integer	•	•
childMod[n]	Object	•	
childModCount	Integer	•	
childObject[n]	Object	•	
childObjectCount	Integer	•	
childObjectIndex	Integer	•	
element	Object	•	
next	Object	•	
nextObject	Object	•	
nextParentObject	Object	•	
nextSibling	Object	•	
parent	Object	•	•
previous	Object	•	
previousSibling	Object	•	

[‡] This attribute is supported in the mTropolis editor only, not in players or plug-ins.

Object Attributes

Attributes Attribute (Any Object)	Type	Get	Set
attributeName[n]	String	•	
attributeString[n]	String	•	
attributeType[n]	String	•	
attributeValue[n]	All Types	•	

Cache URL Modifier Attribute	Type	Get	Set
stop	Boolean		•
url	String	•	•

Fetch Net Text Modifier Attribute	Type	Get	Set
stop	Boolean		•
url	String	•	•

Post Net Text Modifier Attribute	Type	Get	Set
stop	Boolean		•
url	String	•	•

File Modifier Attribute	Type	Get	Set
append	String		•
chunkCount	Integer	•	
chunkDelimiters	String	•	•
close	Boolean		•
error	Integer	•	
fileName	String	•	
filePath	String	•	•
index	Integer	•	•
lastDelimiter	String	•	
length	Integer	•	
macCreator	String	•	•
macType	String	•	•
openMode	String	•	•
read[n]	String	•	
readChunk	String	•	
readToEnd	String	•	
write	String		•

List Variable Attribute	Type	Get	Set
count	Integer	•	•
delete[i]	List Type	•	
forAllDo	Object		•
insert[i]	List Type		•
random	List Type	•	
shuffle	Integer	•	
sortAscend	Integer	•	
sortDescend	Integer	•	

Object Attributes

MIDI Modifier Attribute	Type	Get	Set
loop	Boolean		•
muteTrack[n]	Boolean		•
noteChannel	Integer		•
noteDuration	Float		•
noteNum	Integer		•
noteProgram	Integer		•
noteVelocity	Integer		•
pan[n]	Integer		•
playNote	Boolean		•
reset	Boolean		•
soloTrack[n]	Boolean		•
tempo	Integer	•	•
transpose	Integer		•
transposing[n]	Boolean		•
volume	Integer	•	•

Net Messaging Service Attribute	Type	Get	Set
listeningPort	Integer	•	•
localIP	String	•	
maxConnections	Integer	•	•
sourceIP	String	•	
sourceParentPath	String	•	
sourcePath	String	•	
timeOutPeriod	Integer	•	•

Object Reference Variable Attribute	Type	Get	Set
fullPath	String	•	
object	Object	•	•
path	String	•	•

Open Application Modifier Attribute	Type	Get	Set
background	Boolean	•	•
filePath	String	•	•
quit	Boolean	•	•

Open Project Modifier Attribute	Type	Get	Set
addToReturnList	Boolean	•	•
filePath	String	•	•

Open URL Modifier Attribute	Type	Get	Set
targetFrame	String	•	•
url	String	•	•

Point Motion Modifier Attribute	Type	Get	Set
destination	Point	•	•
duration	Float	•	•
speed	Float	•	•
updateRate	Integer	•	•

Print File Modifier Attribute	Type	Get	Set
filePath	String	•	•
showDialog	Boolean		•

Miniscript Syntax

Control Statement	Description
set <i>variable</i> to <i>expression</i>	Assignment of a value to a variable
set <i>attribute</i> to <i>expression</i>	Setting an object attribute
send "message" [with <i>data</i>] [to <i>target</i>]	Sending a message (element is the default target)
send "message" [with <i>data</i>] [to <i>target</i>] opt[ions] [i[mmediate]] [c[ascade]] [r[elay]]	Sending a message with specific message options (element is the default target)
if <i>expression</i> then <i>statement</i>	Single-case, one-line conditional statement
if <i>expression</i> then <i>statements</i> end if	Single-case, multiple-line conditional statement
if <i>expression</i> then <i>statements</i> else <i>statements</i> end if	Two-way conditional branch
if <i>expression</i> then <i>statements</i> [else if <i>expression</i> then <i>statements</i>] [...] [else <i>statements</i>] end if	Multiple-case conditional branch
-- <i>comment</i>	Comment (do not execute) to end of line

Data Type	Syntax	Example
boolean	true or false	true
integer	<i>n</i>	578
string	" <i>text</i> "	"mFactory"
integer range	(<i>n</i> thru <i>n</i>)	(5 thru 75)
floating-point	<i>n.n</i>	109.2756
vector [†]	(<i>n</i> ° <i>n.n</i>)	(90°2.5)
point	(<i>n,n</i>)	(640,480)
object reference	<i>object</i> [. <i>object</i> [...]]	myScene.myElement.myMod
list	{ <i>n, n, ..., n</i> }	{"dog", "cat", "bird"}

[†] The degrees symbol can be typed by pressing Shift-Option-8.

Miniscript Syntax

Operator	Description	Precedence
()	Expression Grouping	1 (first)
not	Boolean NOT	2
^	Exponentiation	3
*	Multiplication	4
/	Division	4
div	Integer Division	4
mod	Integer Modulus	4
+	Addition	5
-	Subtraction or Unary Negation	5
>	Greater Than	6
>= or ≥	Greater Than or Equal To	6
<	Less Than	6
<= or ≤	Less Than or Equal To	6
=	Equal To	7
<> or ≠	Not Equal To	7
and	Boolean AND	8
or	Boolean OR	9 (last)
&	String Concatenation	-

Target [†]	Description
project	Project containing the Miniscript modifier
section	Section containing the Miniscript modifier
subsection	Subsection containing the Miniscript modifier
scene	Scene containing the Miniscript modifier
activeScene	Currently active scene (the scene the user currently sees; not necessarily the Scene containing the Miniscript modifier)
sharedScene	Currently active shared scene
element	Element containing the Miniscript modifier (this is the default target; it can be omitted when accessing element attributes or sending messages to the element)
parent	Immediate parent of the Miniscript modifier
element.parent	Parent of the element containing the Miniscript modifier
source	Modifier that sent the message that triggered the Miniscript modifier
source.parent	Immediate parent of the modifier that sent the message that triggered the Miniscript modifier
source.element	Element containing the modifier that sent the message that triggered the Miniscript modifier
this	The Miniscript modifier itself

[†] See the “Structure Attribute” table on page 10 for additional object targeting options.

Miniscript Syntax

Environment Variable	Type	Get	Set
debug	Any		•
mouse	Point	•	
ticks	Integer	•	

Miniscript Functions

Math Function	Parameters	Returns
abs	<i>numericExpression</i>	Float
atn	<i>numericExpression</i>	Float
cosh	<i>numericExpression</i>	Float
cos	<i>numericExpression</i>	Float
exp	<i>numericExpression</i>	Float
ln	<i>numericExpression</i>	Float
log	<i>numericExpression</i>	Float
random	<i>limit</i>	Integer
round	<i>numericExpression</i>	Integer
sgn	<i>numericExpression</i>	Float
sin	<i>numericExpression</i>	Float
sinh	<i>numericExpression</i>	Float
sqrt	<i>numericExpression</i>	Float
tan	<i>numericExpression</i>	Float
tanh	<i>numericExpression</i>	Float
trunc	<i>numericExpression</i>	Integer

Data Conversion Function	Parameters	Returns
AsciiToChar	<i>asciiValue</i>	String
CharToAscii	<i>character</i>	Integer
NumToString	<i>numericExpression</i>	String
StringToNum	<i>string</i>	Integer or Float
Lowercase	<i>string</i>	String
Uppercase	<i>string</i>	String
polar2rect	<i>vector</i>	Point
rect2polar	<i>xyPoint</i>	Vector

Miniscript Functions

String Chunking Function	Parameters	Returns
Character	<i>indexOrRange, string</i>	String
Chunk	<i>indexOrRange, string, delimiters</i>	String
ChunkCount	<i>string, delimiters</i>	Integer
ChunkRange	<i>indexOrRange, string, delimiters</i>	String
Paragraph	<i>indexOrRange, string</i>	String
ParagraphCount	<i>string</i>	Integer
ParagraphRange	<i>indexOrRange, string</i>	Range
StringLength	<i>string</i>	Integer
Word	<i>indexOrRange, string</i>	String
WordCount	<i>string</i>	Integer
WordRange	<i>indexOrRange, string</i>	Range
String Editing Function	Parameters	Returns
DeleteString	<i>substringRange, string</i>	String
InsertString	<i>stringToInsert, destinationString, index</i>	String
ReplaceString	<i>substringRange, destinationString, replacementString</i>	String
String Searching Function	Parameters	Returns
FindStringCount	<i>stringToFind, stringToSearch, [caseSensitive]</i>	Integer
FindStringRange	<i>stringToFind, stringToSearch, [caseSensitive], [index]</i>	Range
String Comparison Function	Parameters	Returns
CompareStrings	<i>string1, string2, [caseSensitive]</i>	Boolean
EqualString	<i>string1, string2, [caseSensitive]</i>	Boolean
Miscellaneous Function	Parameters	Returns
CanGet	<i>objectReference, attributeString</i>	Boolean
CanSet	<i>objectReference, attributeString</i>	Boolean

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