2011 INTRODUCTION TO GRAPHICS NOTES

ADDITIONAL NOTES AND EXERCISES

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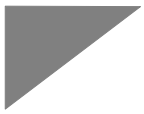
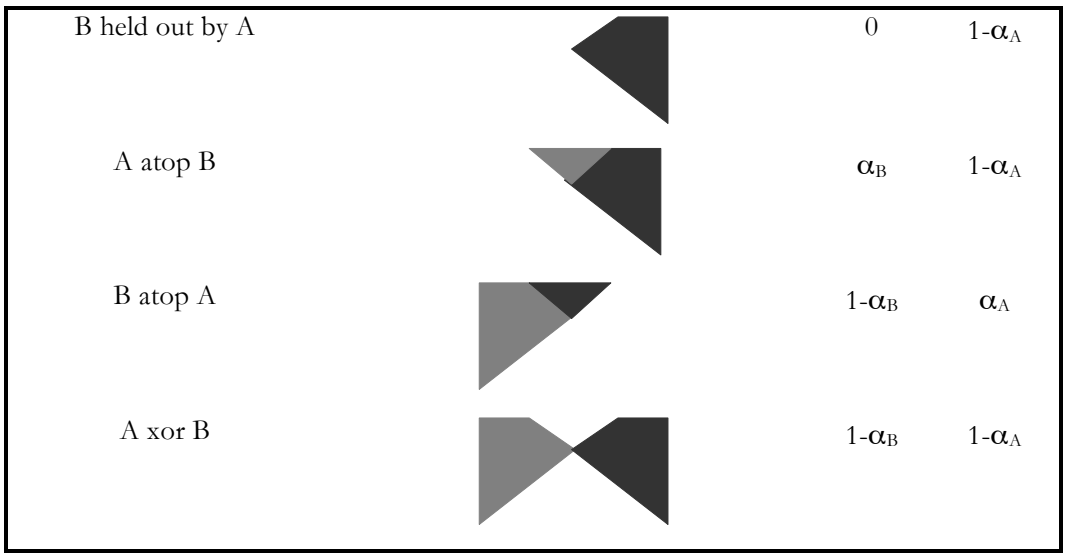
LECTURE 3: ALIASING AND ALPHA

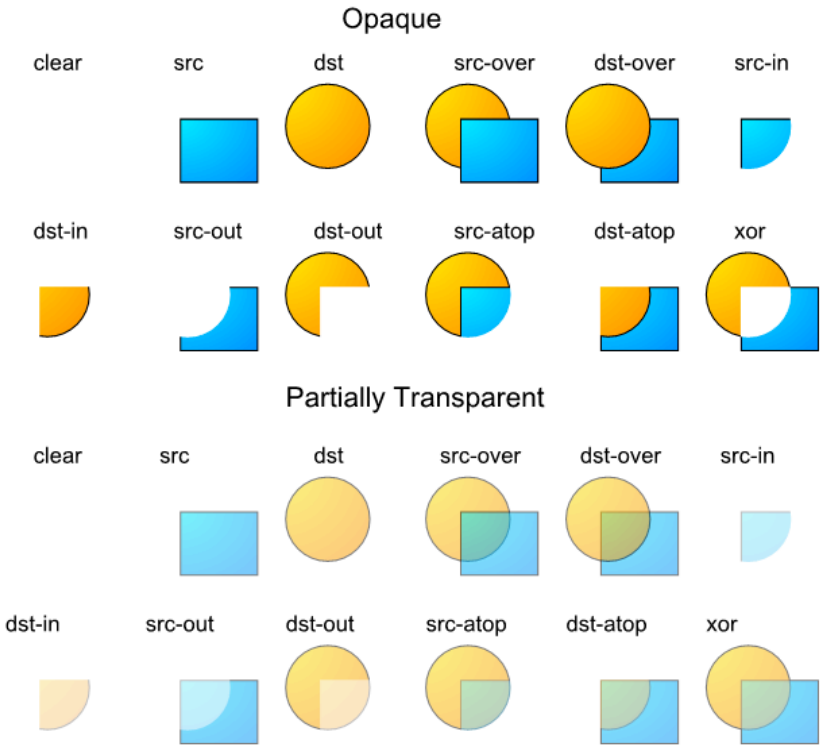
PORTER DUFF COMPOSITION RULES

Make sure you read through
http://java.sun.com/docs/books/tutorial/2d/display/compositing.html for descriptions of the Porter Duff rules implemented by Java2D. You do not need to know all twelve rules, just the ones we use in the lectures. For completeness though, and you might want to think about when people use these rules rather than source over destination. The twelve rules are:

Operation	Diagram	f_a	f_b
Clear		0	0
A		1	0
B		0	1
A over B		1	$1-\alpha_A$
B over A		$1-\alpha_B$	1
A in B		α_B	0
B in A		0	α_A
A held out by B		$1-\alpha_B$	0



OPAQUE VS. TRANSPARENT COMPOSITION

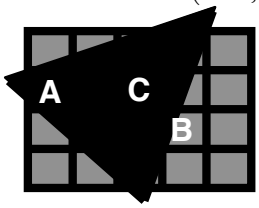


ADDITIONAL SOURCES

See Java2D (Knudsen) and the Java2D tutorial trail for more examples of alpha and aliasing.

EXERCISES

1. Consider the example from the lectures again. Now the background (destination) is transparent grey (0.5, 0.5, 0.5, 0.5). The triangle (source) is still opaque black (0,0,0,1). They are to be composed with source over destination composition. What are the final values of the pixels a, b c given that they are covered by the same percentage of the triangle as they were in the example from the lecture (90%, 10%, 100% respectively).



2. An image is composed solely of grey values in the range (0.25, 0.8) specify an equation that maps intensity from this range to (0,1).
3. For which of the Porter Duff rules can you think of common uses? What types of composition rules do you think are used when creating film sequences that combine live action and digital effects?