Computational Photography Tutorial 1.0

A note on generalization.

In [28]:
```
def my_copy(image):
    '''Make a copy of image.'''
    output = np.zeros((800,600,3), dtype = np.uint8)
    output[:] = image

    return output

image1 = np.ones((800,600,3), dtype = np.uint8)
out1 = my_copy(image1)
print out1.shape
print out1.dtype
print out1[0,0,0]
print "finished!"
```

```
(800, 600, 3)
uint8
1
finished!
```

In [29]:
```
image2 = np.ones((4,4,3), dtype = np.uint8)
out2 = my_copy(image2)
print out2.shape
print out2.dtype
print out2[0,0,0]
print "finished!"
```

```
---------------------------------------------------------------------
------
ValueError                                Traceback (most recent call
last)
<ipython-input-29-9b160f606e9a> in <module>()
      1 image2 = np.ones((4,4,3), dtype = np.uint8)
----> 2 out2 = my_copy(image2)
      3 print out2.shape
      4 print out2.dtype
      5 print out2[0,0,0]

<ipython-input-28-fc8e9fb6ec14> in my_copy(image)
      2     '''Make a copy of image.'''
      3     output = np.zeros((800,600,3), dtype = np.uint8)
----> 4     output[:] = image
      5
```

```
      6     return output

ValueError: could not broadcast input array from shape (4,4,3) into
shape (800,600,3)
```

In [30]:
```
image3 = np.ones((800,600,3), dtype = float)
image3[:,:,:] = 314.15
out3 = my_copy(image3)
print out3.shape
print out3.dtype
print out3[0,0,0]
print "finished!"
```

```
(800, 600, 3)
uint8
58
finished!
```

In [31]:
```
def my_copy2(image):
    '''Make a copy of image.'''
    output = np.zeros(image.shape, dtype = image.dtype)

    output[:] = image

    return output
```

In [32]:
```
out1 = function2(image1)
out2 = function2(image2)
out3 = function2(image3)

print out1.shape, out1.dtype, out1[0,0,0]
print out2.shape, out2.dtype, out2[0,0,0]
print out3.shape, out3.dtype, out3[0,0,0]
```

```
(800, 600, 3) uint8 1
(4, 4, 3) uint8 1
(800, 600, 3) float64 314.15
```

In [ ]: