In [2]:

```
#keep
import numpy as np
import matplotlib.pyplot as pt
%matplotlib inline
```

In [6]:

```
#keep
from PIL import Image

with Image.open("siebel.jpg") as img:
    rgb_img = np.array(img)
rgb_img.shape
```

Out[6]:

```
(370, 552, 3)
```

In [7]:

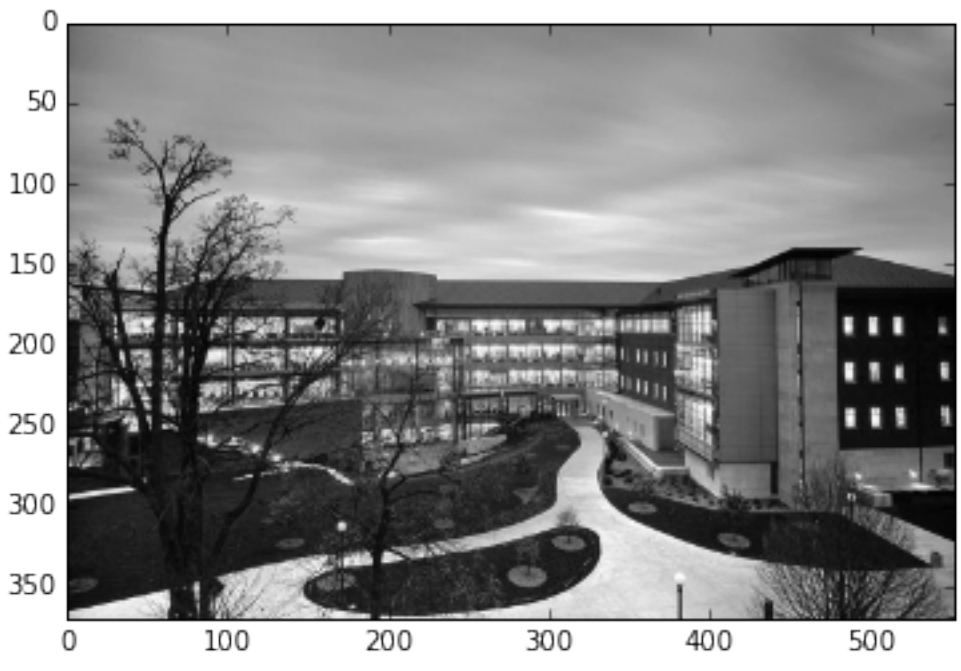
```
#keep
img = np.sum(rgb_img, axis=-1)
```

In [8]:

```
#keep
pt.imshow(img, cmap="gray")
```

Out[8]:

```
<matplotlib.figure.AxesImage at 0x112f4b668>
```



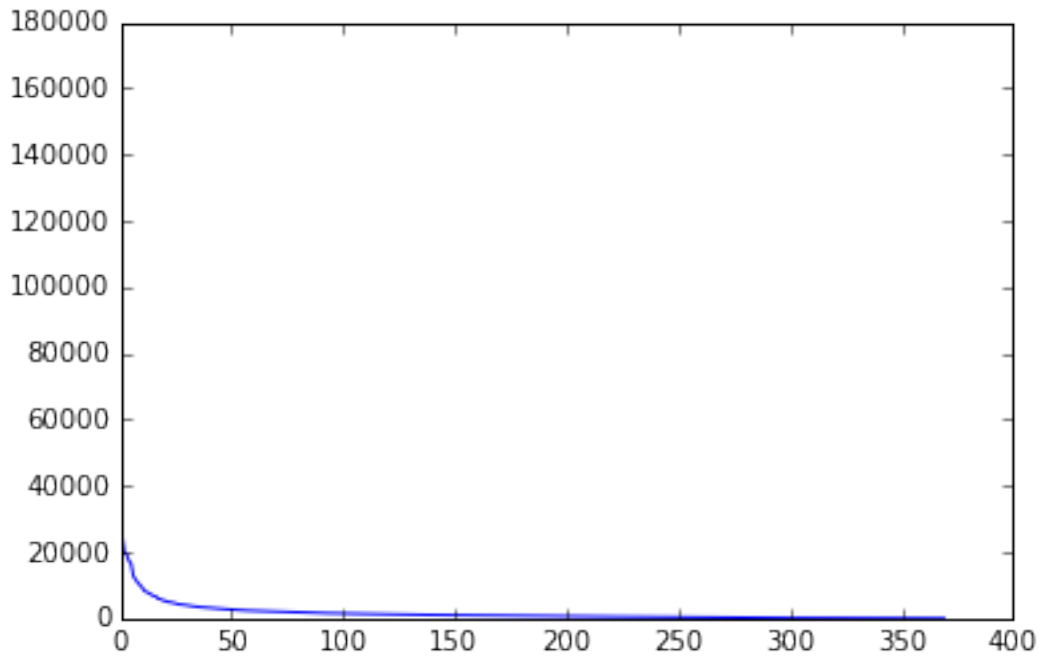
In [10]:

```
#keep
u, sigma, vt = np.linalg.svd(img)
sigma

pt.plot(sigma)
```

Out[10]:

```
[<matplotlib.lines.Line2D at 0x11438c320>]
```



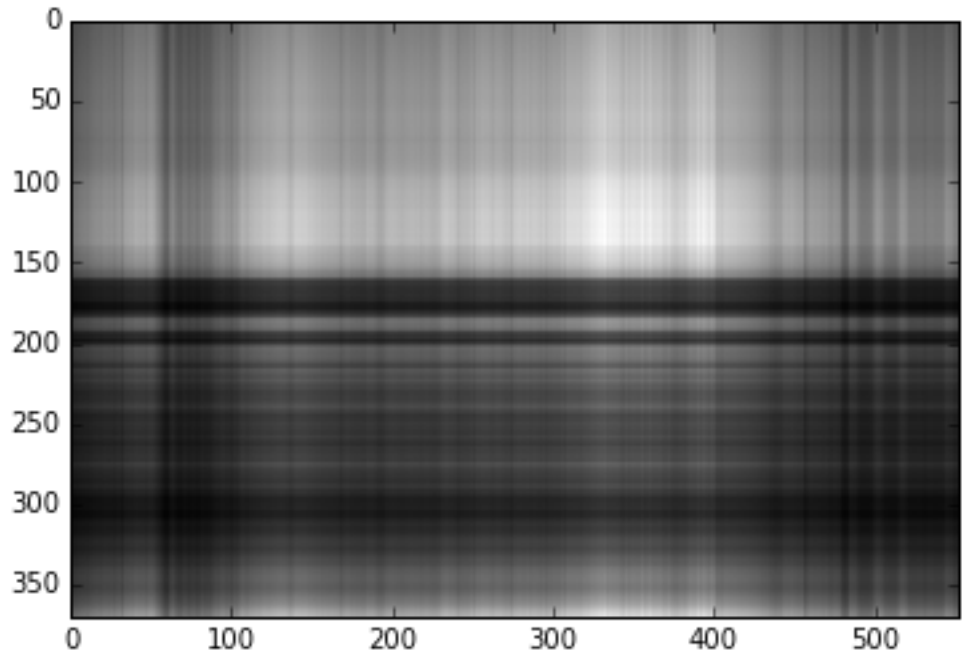
In [12]:

```
#keep
i=0
compressed_img = sigma[0] * np.outer(u[:, 0], vt[0])

pt.imshow(compressed_img, cmap="gray")
```

Out[12]:

```
<matplotlib.image.AxesImage at 0x114814fd0>
```



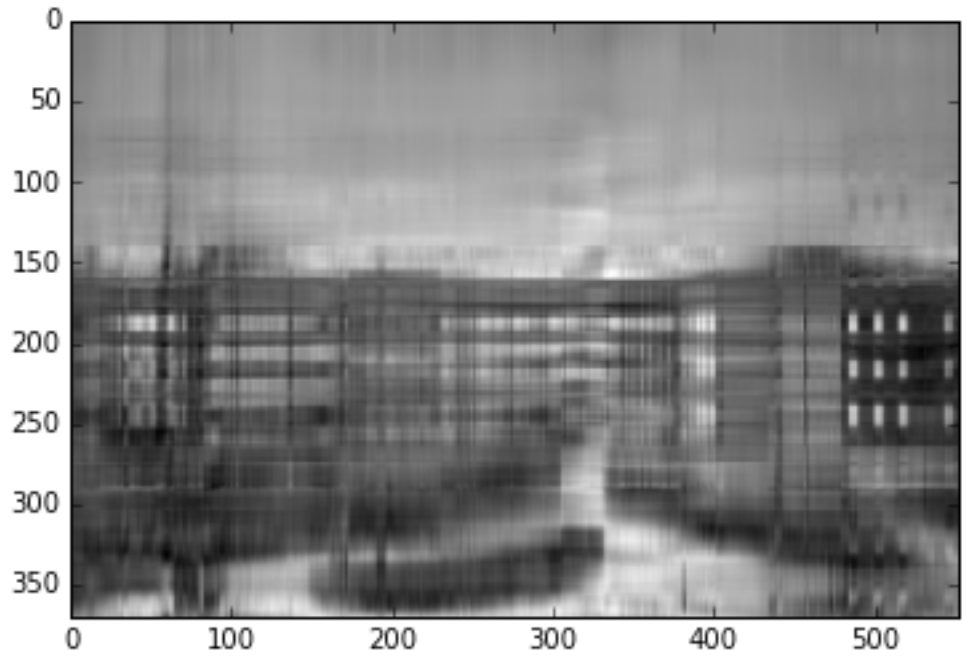
In [19]:

```
#keep
i += 1
compressed_img += sigma[i] * np.outer(u[:, i], vt[i])

pt.imshow(compressed_img, cmap="gray")
```

Out[19]:

```
<matplotlib.image.AxesImage at 0x115f8f5c0>
```



In [ ]: