Diatom Choral Fugue

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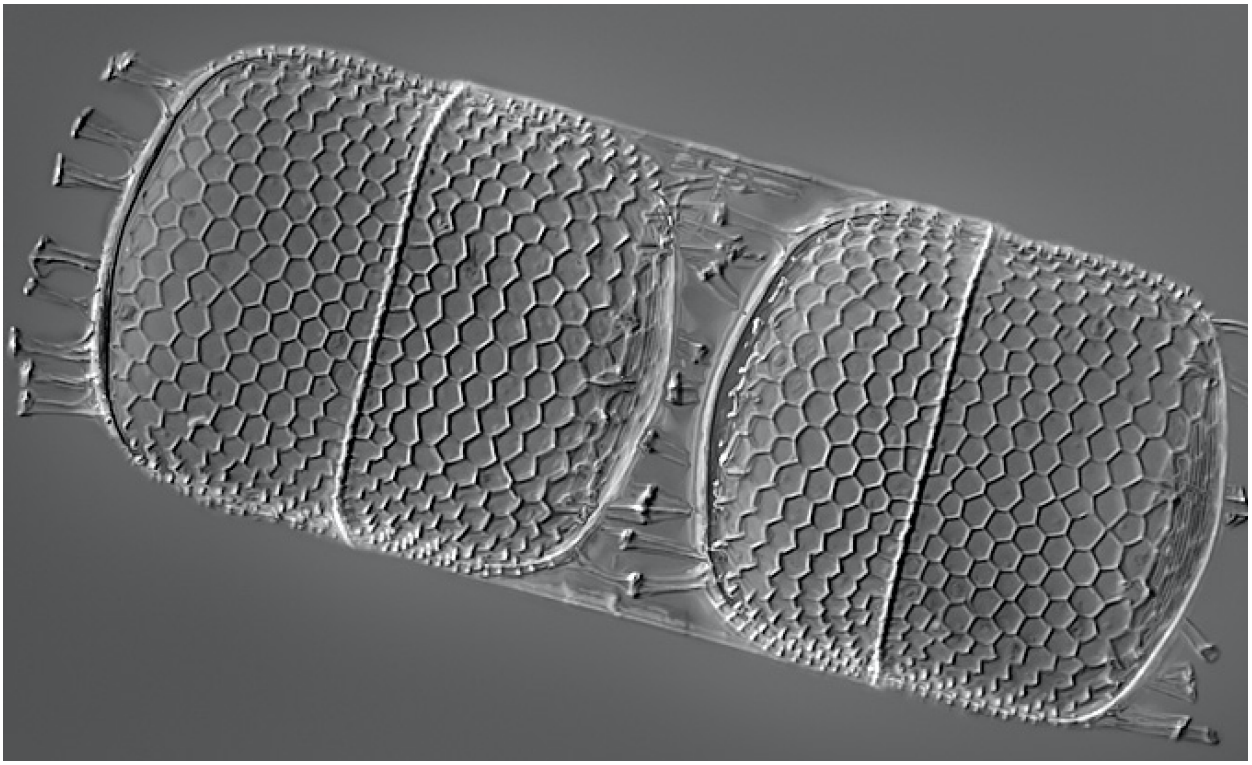
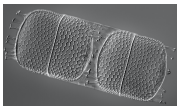
Include the AAvAA library for image sonification:

In[3]:=
```
<< "/Users/darashaydalxfer/Documents/Sufi Notes/AAvAA/AAvAA.m"
SetOptions[EvaluationNotebook[],
  PrivateNotebookOptions → {"PluginToolbarEnabled" → False}];
```

This image is from http://www.krebsmicro.com/forumpix/7278-7302small.jpg :



In[28]:=
```
img =
```

```
;
```

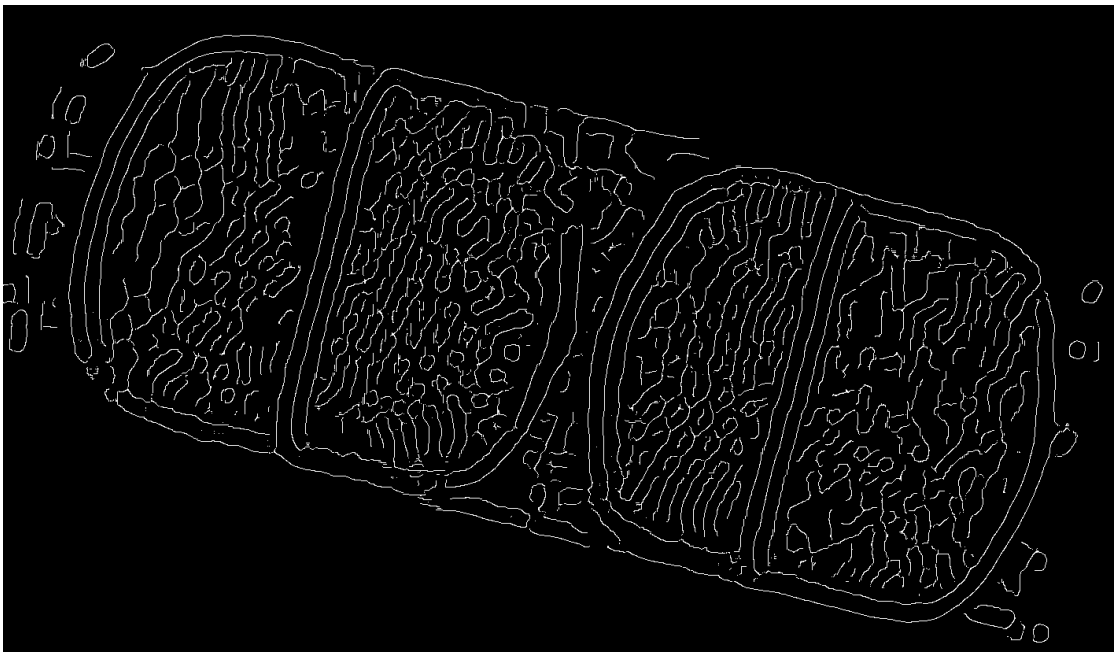
```
ImageDimensions@img
```

Out[29]=
```
{1412, 822}
```

I tried the Edge Detect filter but did not like the sounds:

In[23]:=
```
imgEDGE = EdgeDetect[img, 20]
```

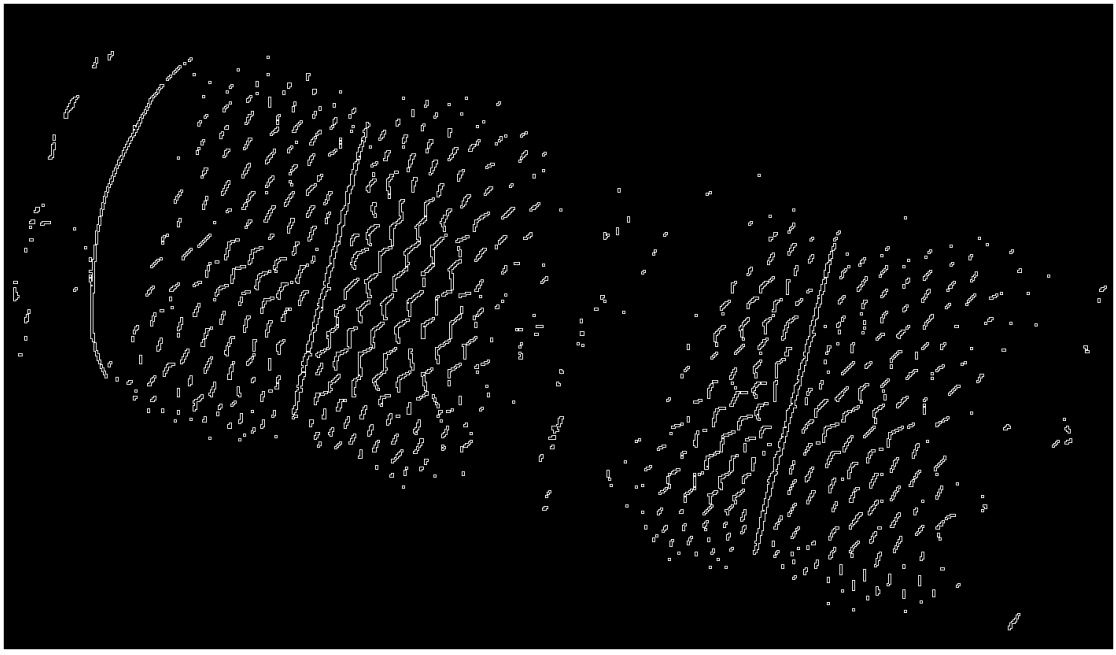
Out[23]=



Then I decided to capture a part of the beautiful hexgons:

In[37]:=
```
morph = MorphologicalPerimeter[img, 0.05]
```

Out[37]=



Scan the image from left to right, vertically, and then map the pixels and their intensity into some Scale

e.g. see the attached double harmonic.

In[38]:=
```
s = Sonify[morph, sclHAR, 0.2 * 260.741 , 10, 60 * 2];
```

Once sonified i.e. equations of the sound waves added vertically to each other for some delta period of time, then turn the equations of sonic waves into actual sound and generate a .wav file. Later Melodyne turns the sounds into actually midi notes in G-Minor.

In[39]:=
```
Export["/Users/darashayda1xfer/Documents/Sufi Notes/Diatom/Diatom_morph.wav",
  Play[Evaluate[s /. {"t" → t}], {t, 0, 60}, SampleRate → 30 000], "Sound"];
```

In[7]:=
```
sclHAR = {29.25 / 32,
30.50 / 32,
31.75 / 32,
1,
32.25 / 32,
32.50 / 32,
32.75 / 32,
33 / 32,
63.25 / 32,
63.50 / 32,
63.75 / 32,
2,
64.25 / 32,
64.50 / 32,
64.75 / 32,
65 / 32,
95.2 / 32,
95.50 / 32,
95.75 / 32,
3,
96.25 / 32,
96.50 / 32,
96.75 / 32,
97 / 32,
127.25 / 32,
127.50 / 32,
127.75 / 32,
4,
128.25 / 32,
128.50 / 32,
128.75 / 32,
129 / 32,
159.25 / 32,
159.50 / 32,
159.75 / 32,
5,
160.25 / 32,
160.50 / 32,
160.75 / 32,
161 / 32,
191.25 / 32,
191.50 / 32,
```

```
191.75 / 32,
6,
192.25 / 32,
192.50 / 32,
192.75 / 32,
193 / 32,
223.25 / 32,
223 / 32,
223.75 / 32,
7,
224.25 / 32,
224.50 / 32,
224.75 / 32,
225 / 32,
255.25 / 32,
255.50 / 32,
255.75 / 32,
8,
256.25 / 32,
256.50 / 32,
256.75 / 32,
257 / 32,
287.25 / 32,
287.50 / 32,
287.75 / 32,
9,
288.25 / 32,
288.50 / 32,
288.75 / 32,
289 / 32,
319.25 / 32,
319.50 / 32,
319.75 / 32,
10,
320.25 / 32,
320.50 / 32,
320.75 / 32,
321 / 32,
348.25 / 32,
349.50 / 32,
350.75 / 32,
11,
352.25 / 32,
352.50 / 32,
352.75 / 32,
353 / 32,
383.25 / 32,
383.50 / 32,
383.75 / 32,
12,
384.25 / 32,
384.50 / 32,
384.75 / 32,
385 / 32
```