GIS+ Project

Rasterizer

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Task: Rasterizer

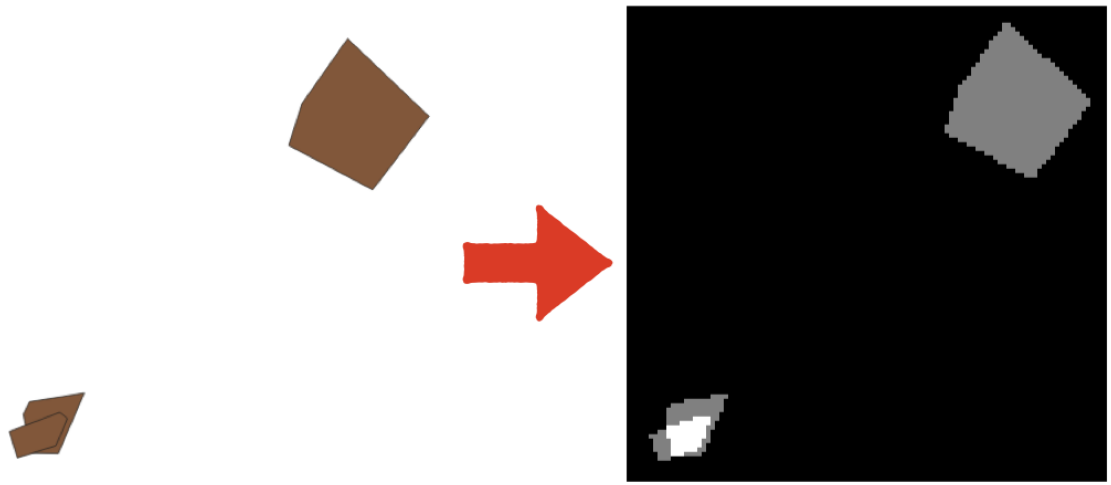
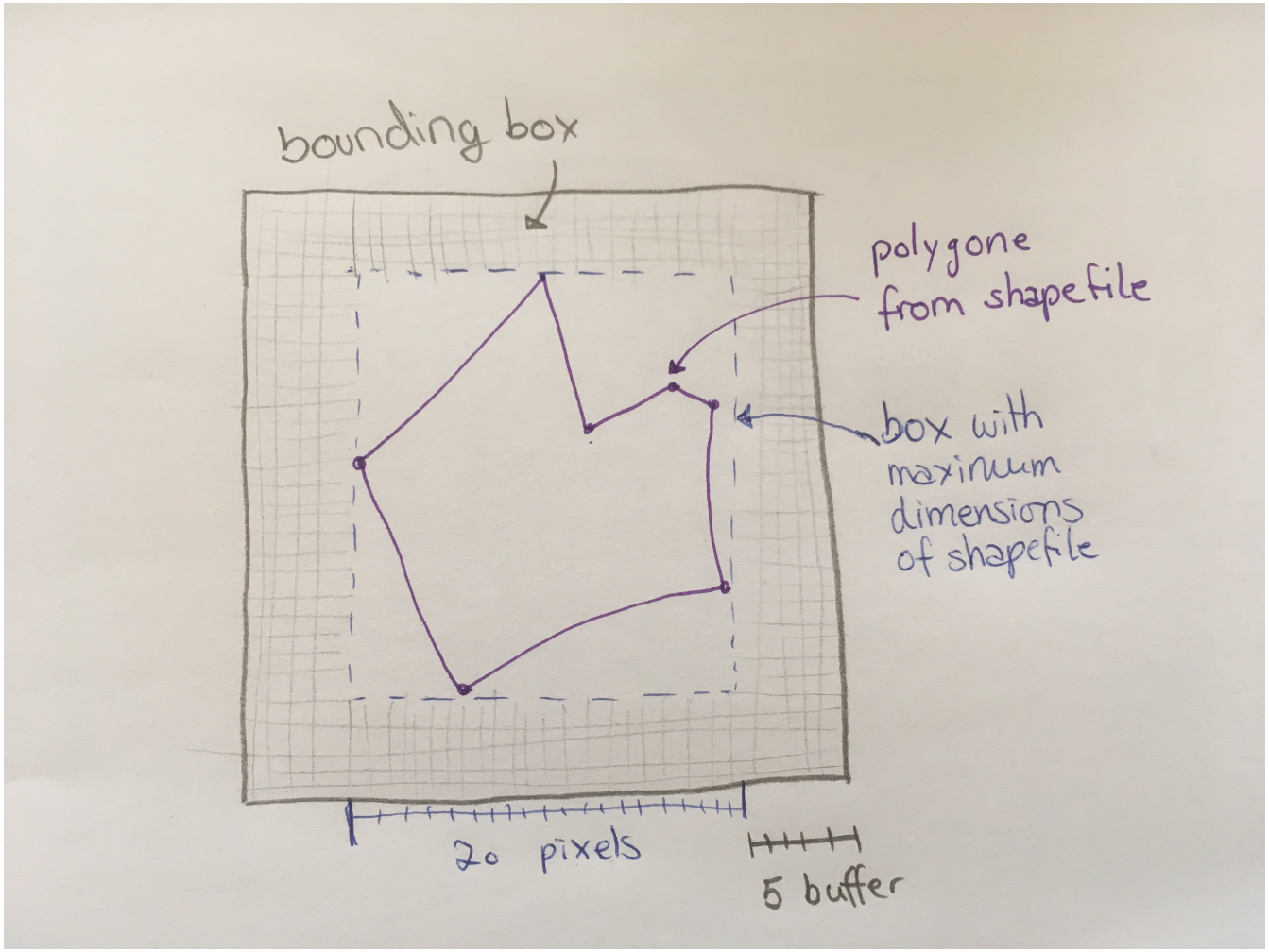


Figure: from shape to raster

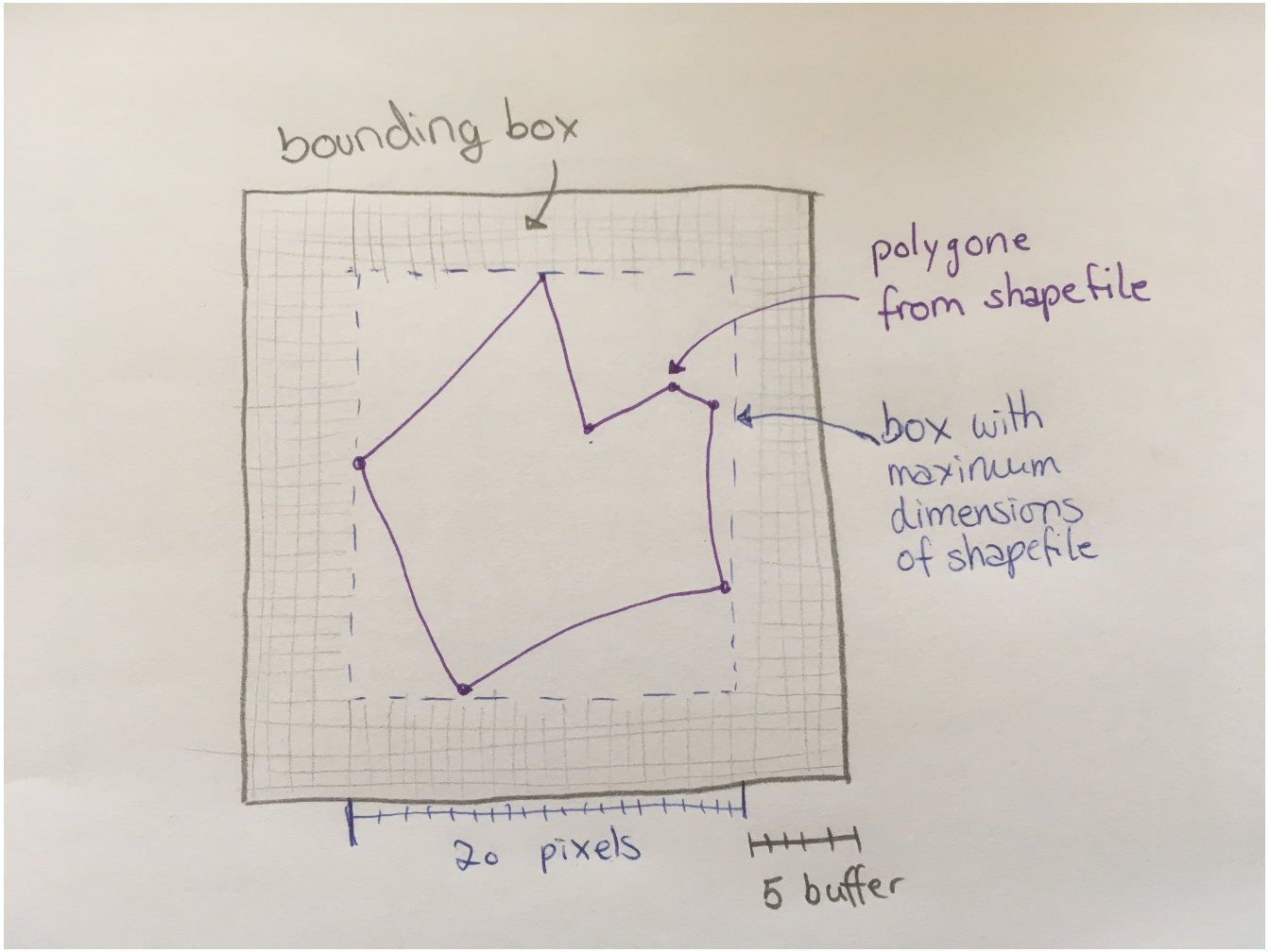
Load Shapefile with Fiona Package


```
43      # collect geometries of shape file
44      geometry_coll = spg.collection.GeometryCollection(
45          [shape(pol['geometry']) for pol in fiona.open(filepath)]
46      )
```

Bounding Box



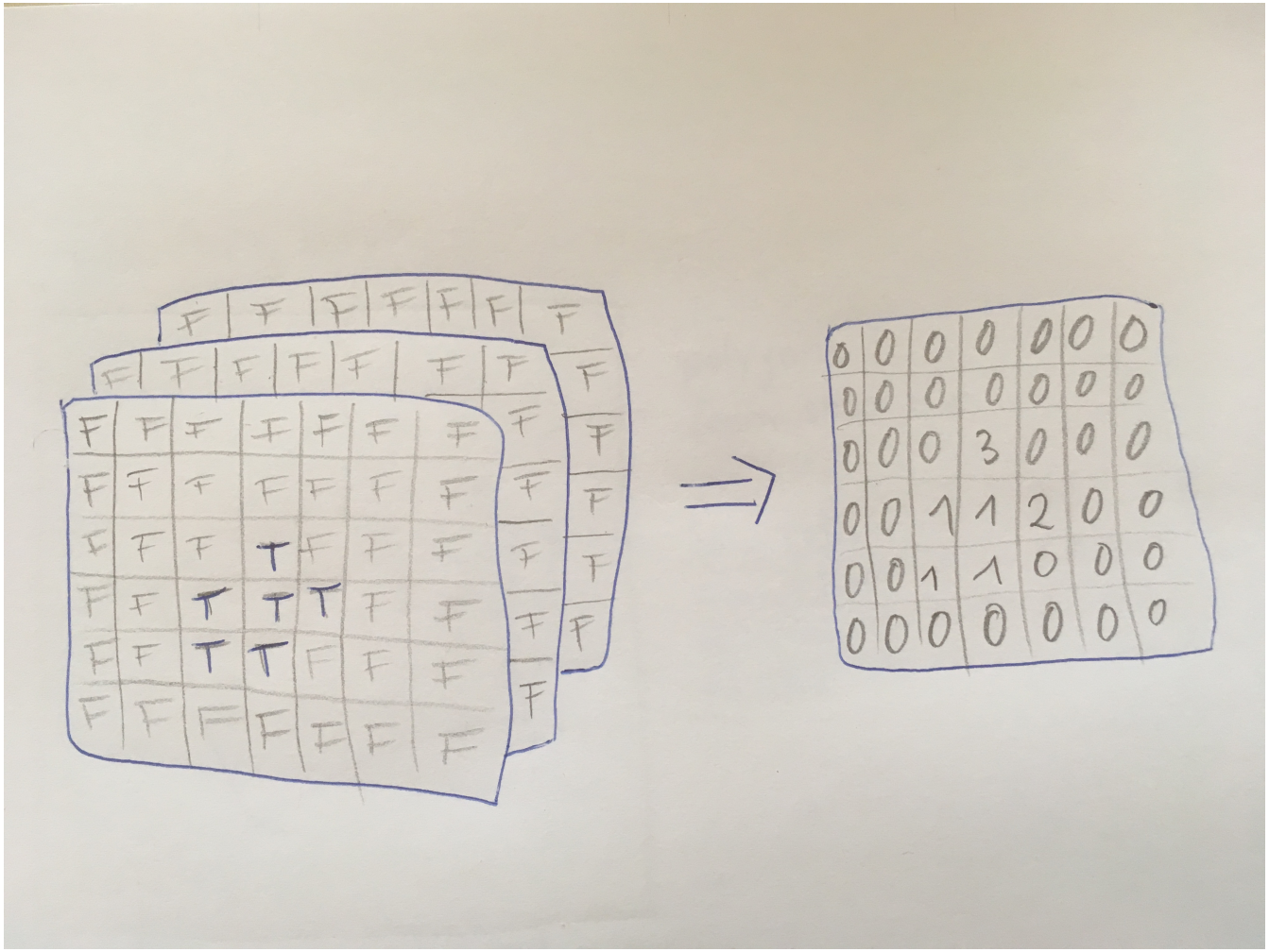
Create a grid



Within query


```
86      within_list = []
87      for i in range(0, len(geometry_coll)):
88          if (isinstance(geometry_coll[i], spg.polygon.Polygon)):
89              step = [pixel.within(geometry_coll[i]) for pixel in geom_pixels]
90          if (isinstance(geometry_coll[i], spg.point.Point)):
91              step = [
92                  (
93                          (pixel.x > (geometry_coll[i].x - 0.5 * resolution)) &
94                          (pixel.x <= (geometry_coll[i].x + 0.5 * resolution))
95                  ) &
96                  (
97                          (pixel.y > (geometry_coll[i].y - 0.5 * resolution)) &
98                          (pixel.y <= (geometry_coll[i].y + 0.5 * resolution))
99                  ) for pixel in geom_pixels
100             ]
101
102         if (isinstance(geometry_coll[i], spg.linestring.LineString)):
103             step = [pixel.within(geometry_coll[i].buffer(float(resolution)))
104                     for pixel in geom_pixels]
105         print('The process is running: {}% completed'.format((round(100 *
    i/len(geometry_coll),2))))
106         within_list.append(step)
```

Sublist



Set radiometric resolution


```
117     # set radiometric resolution to 8bit
118     within_list_sum = np.round_(255 * (np.true_divide(within_list_sum,
    max(within_list_sum))))
```

Flip array


```
129     # flip array for correct presentation
130     flipped_array = np.flipud(within_array)
```

Save as tiff


```
139     ##write image data to tiff file
140     sk.external.tifffile.imsave(outputname, flipped_array)
141
```

Issues

Solved

- Set accurate resolution even if you dont know the range of the coordinates
- Raster-conversion for shp-types point, line and polygon
- Git

Issues

unsolved

- Save tiff-file with reference-system
- Define grey-values in tiff-file according to a specific attribute of the shapefile
- Possibility to choose radiometric resolution of tiff-file