

Learning {ggplot2} with generative art

Nicola Rennie

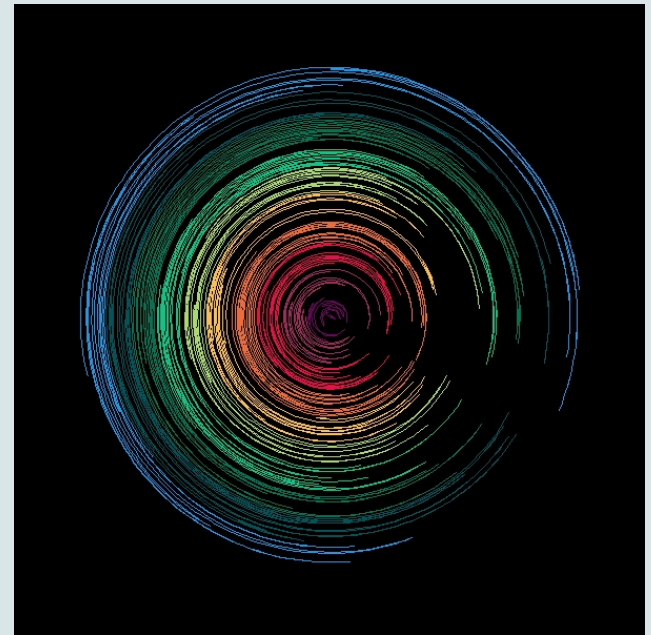
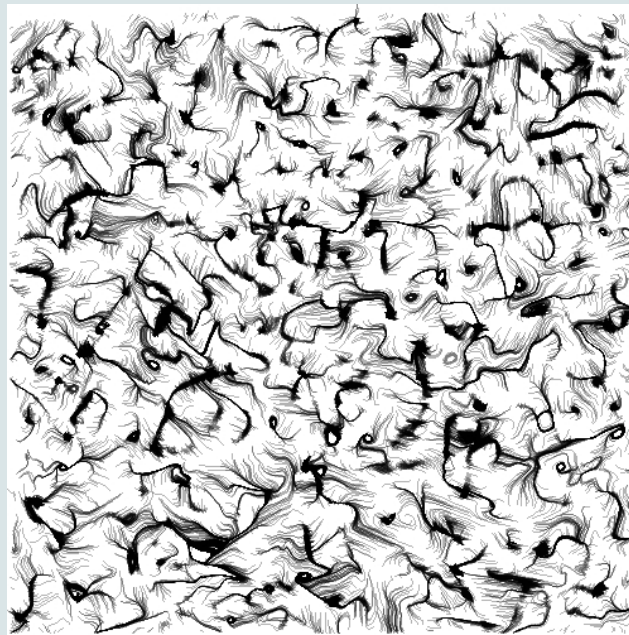
21 June 2022

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What is generative art?

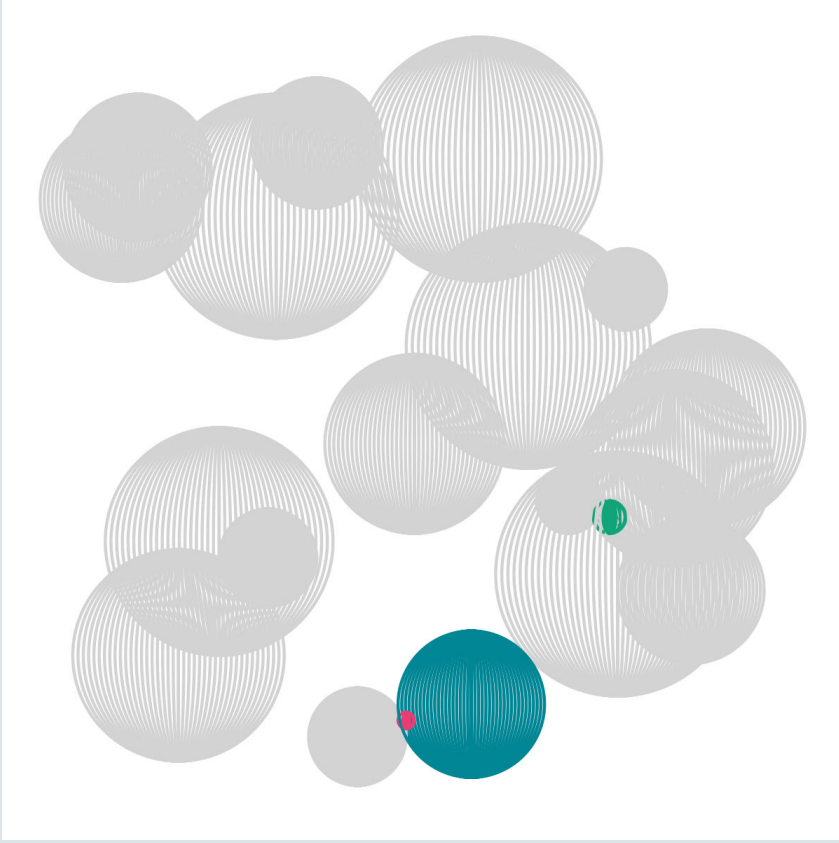
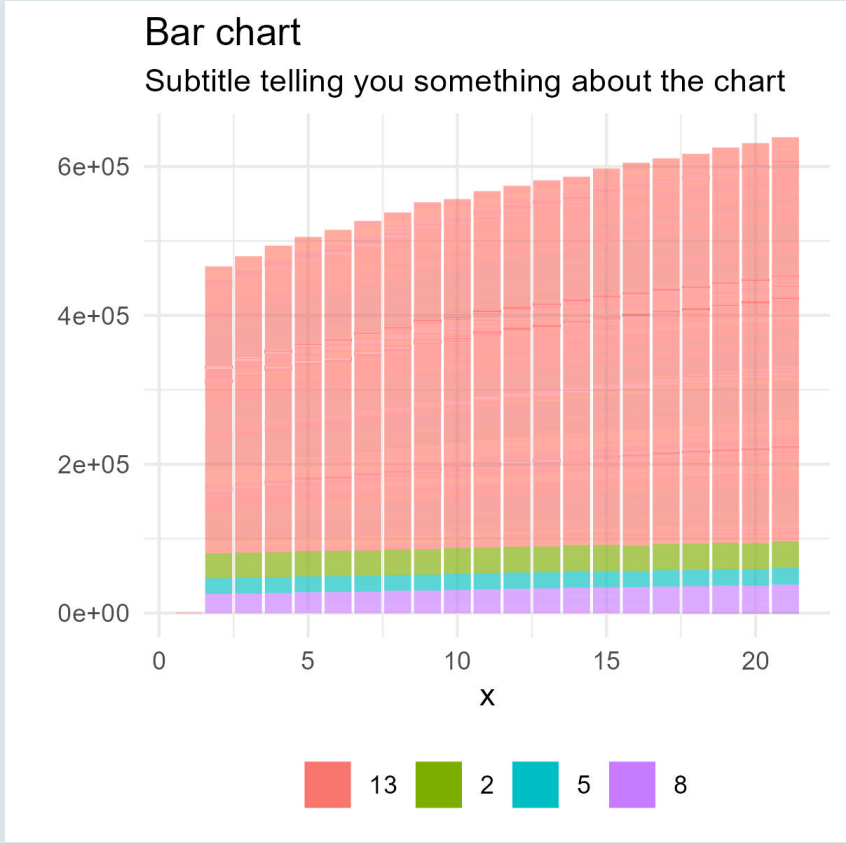
“Generative art is art made using a predetermined system that often includes an element of chance.” - *Tate* ([tate.org.uk](https://www.tate.org.uk))



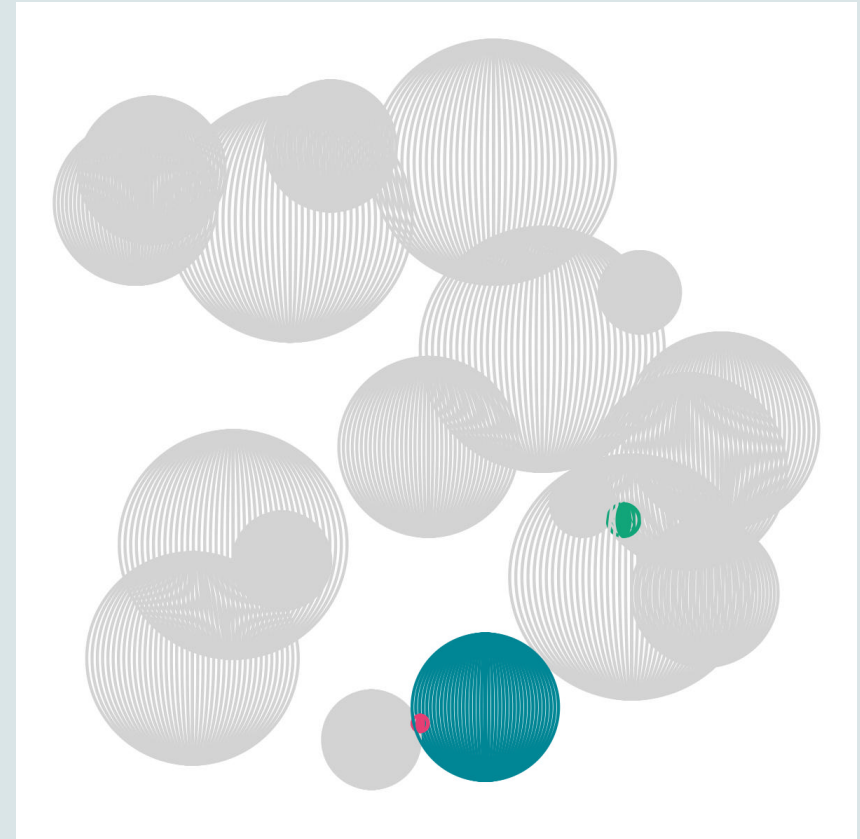
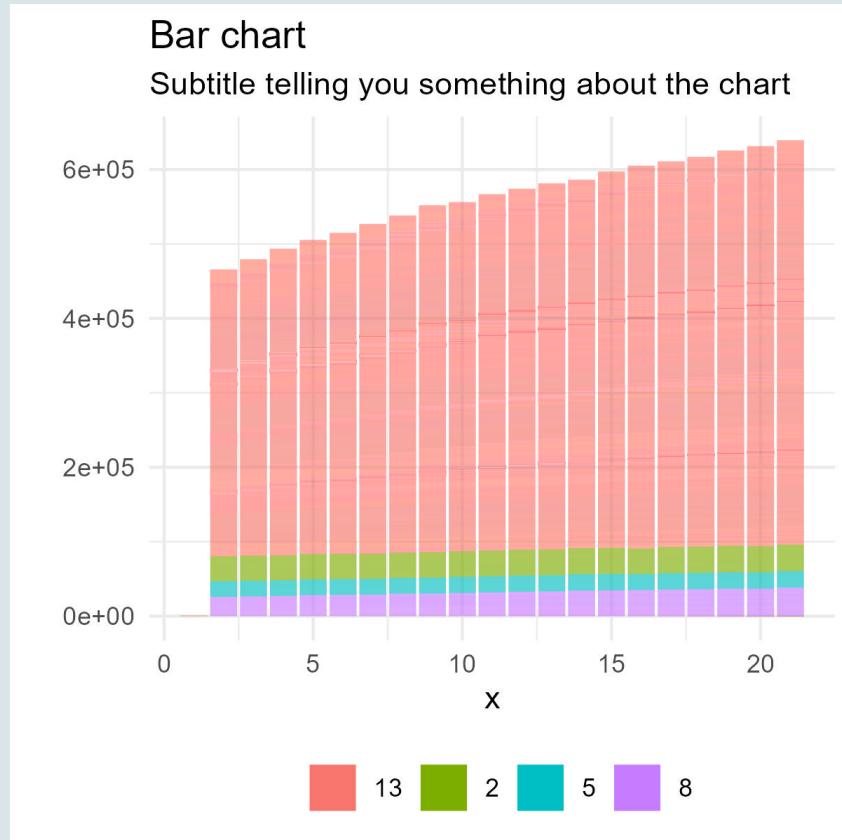
Why is generative art useful?

- You don't need to learn `{ggplot2}` to use `{ggplot2}`
- You can't Google art
- It's fun!

Spot the difference!

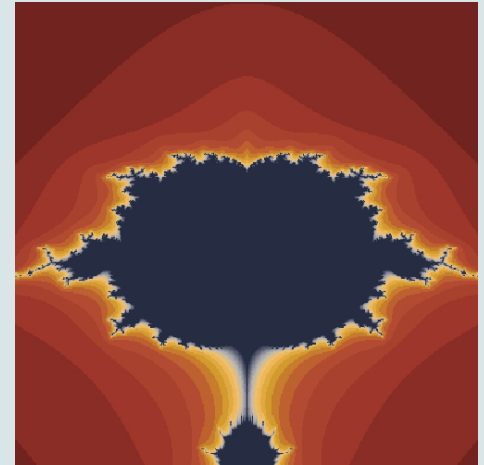
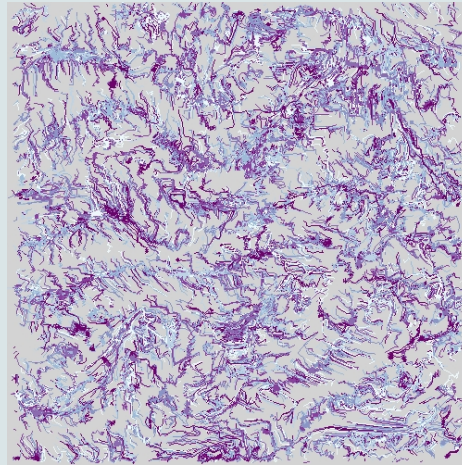
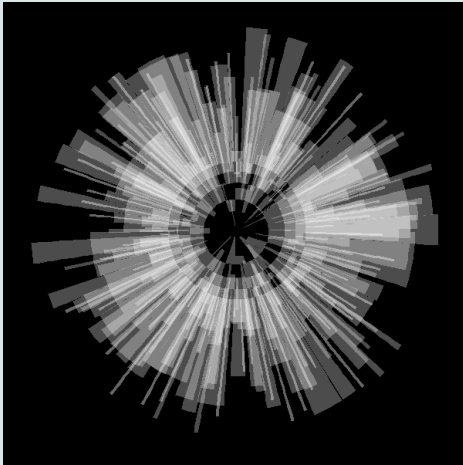


Spot the difference!



Everything! (except the data...)

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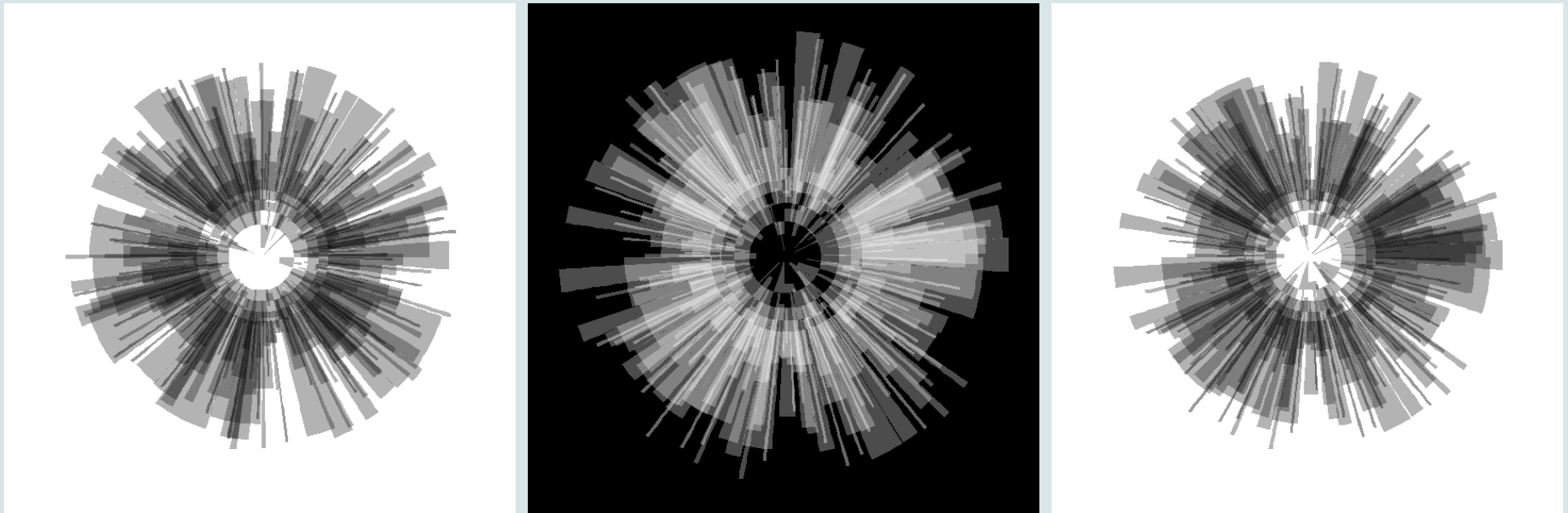
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Layers of layers

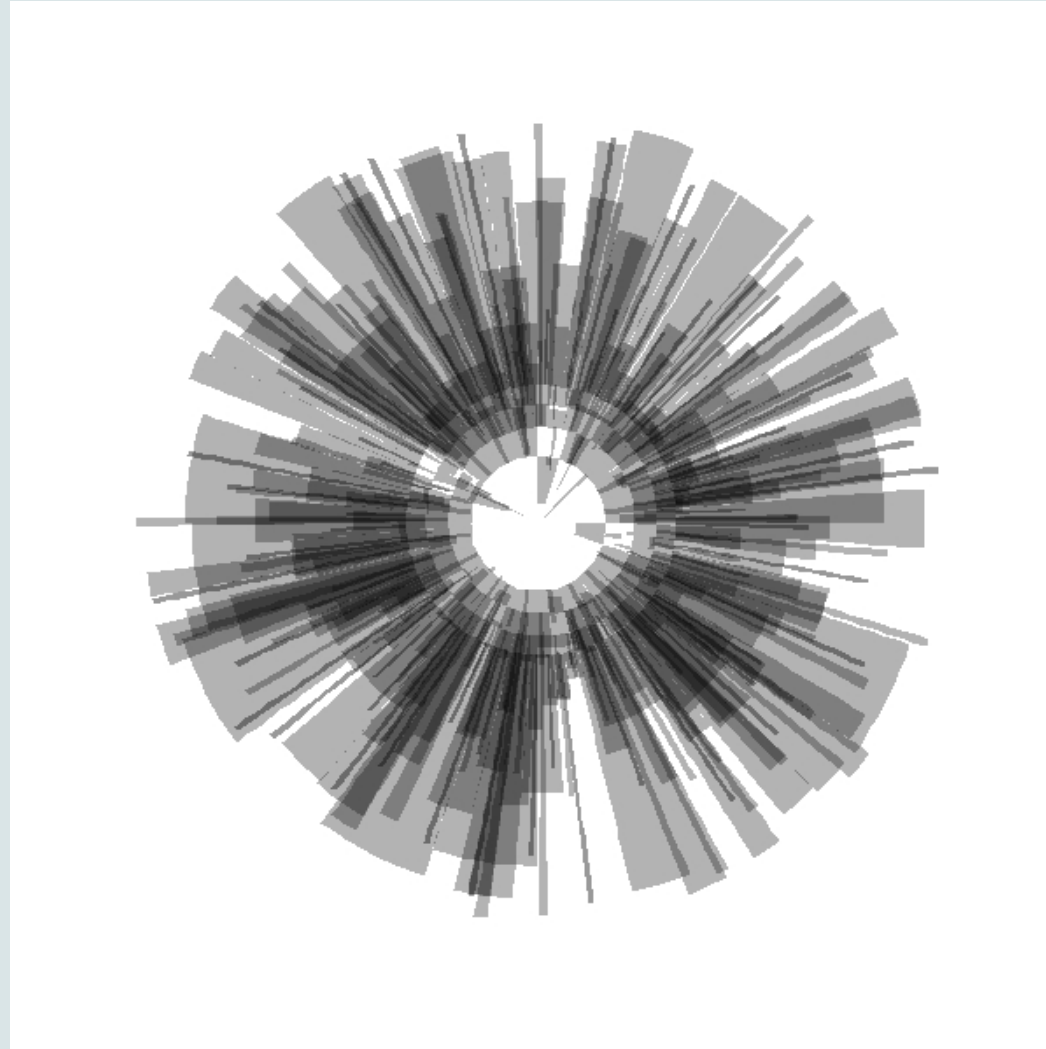
“A layer is a combination of data, stat and geom with a potential position adjustment.”

Layers of layers

“A layer is a combination of data, stat and geom with a potential position adjustment.”

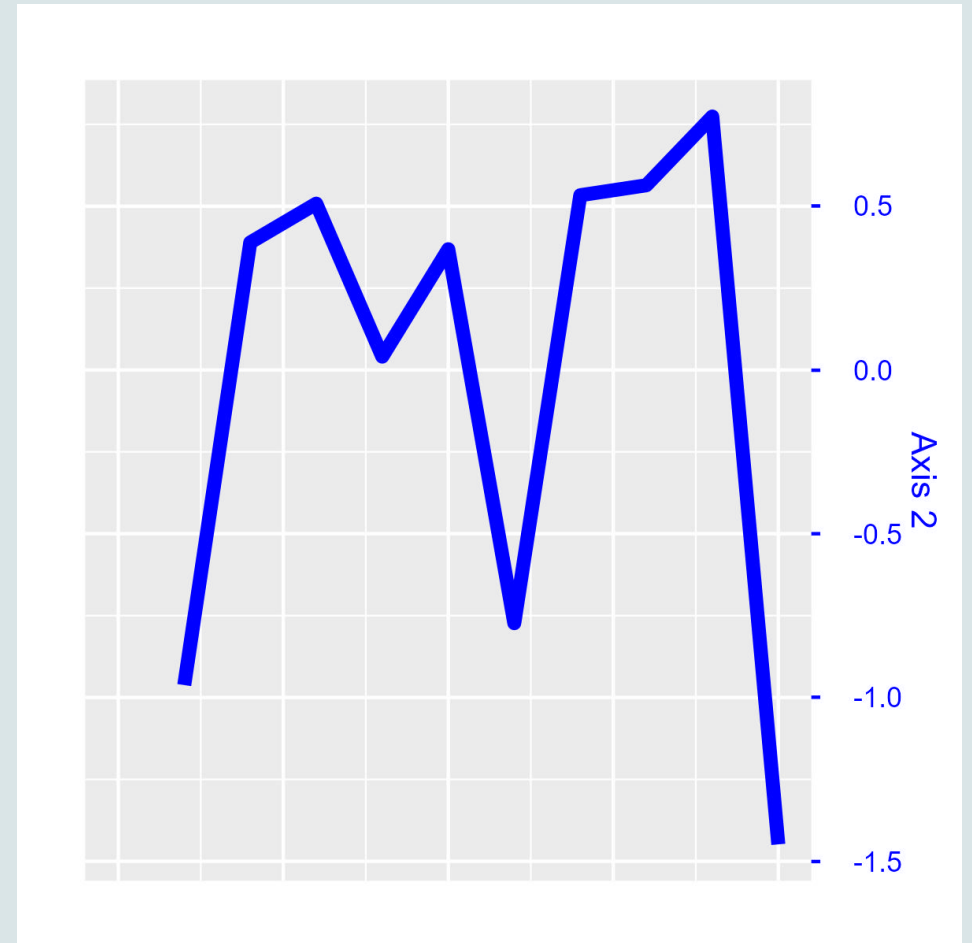
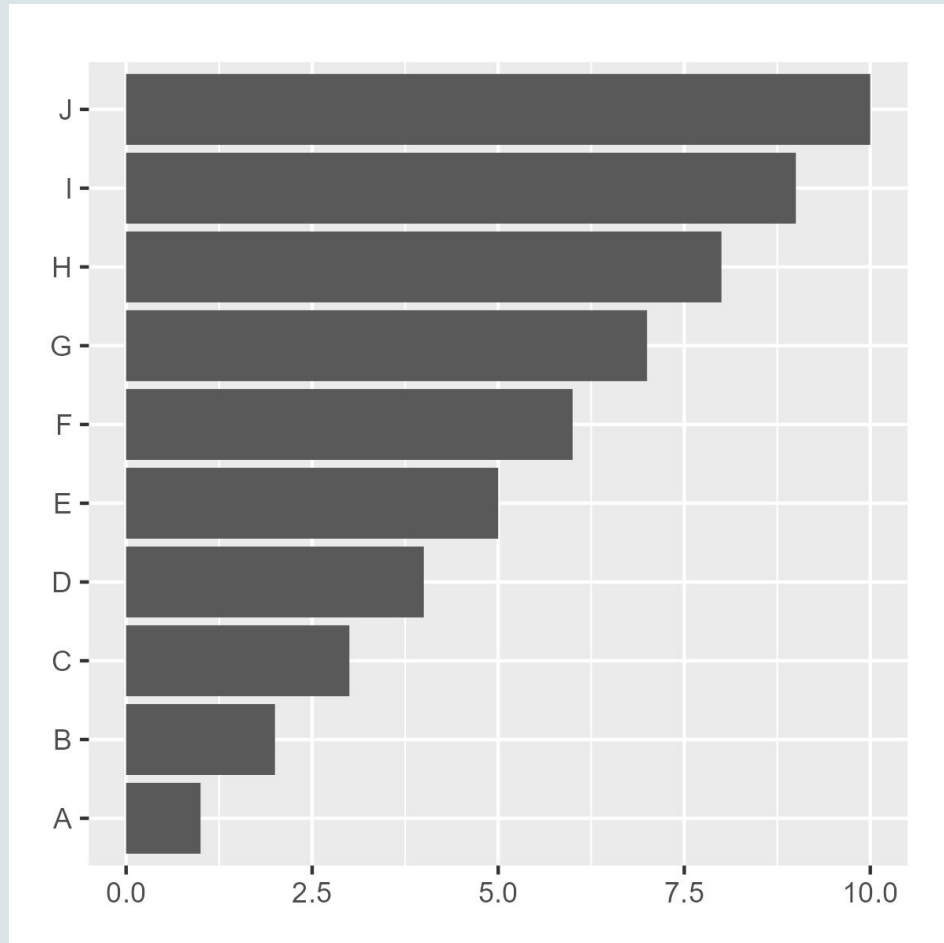


Layers of layers



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Layers of layers



Layers of layers

Error: Discrete value supplied to continuous scale

Layers of layers

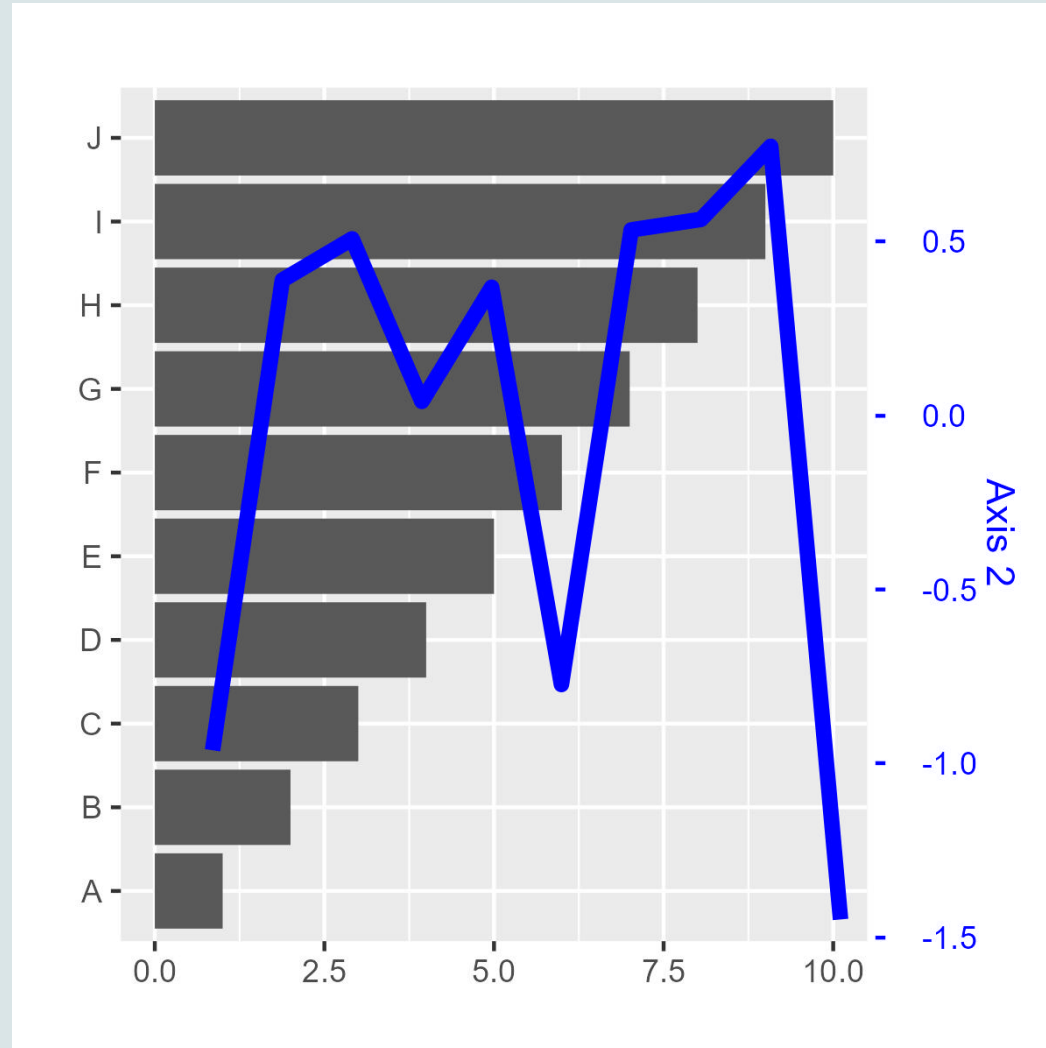
Instead of layers of geoms, we can construct layers of ggplots using {patchwork}...

Layers of layers

Instead of layers of geoms, we can construct layers of ggplots using {patchwork}...

```
1 p1 + inset_element(p2 +  
2     theme(  
3         plot.background = element_blank(),  
4         panel.background = element_blank(),  
5         panel.grid = element_blank()),  
6     left = 0, bottom = 0, right = 1, top = 1,  
7     align_to = "full")
```

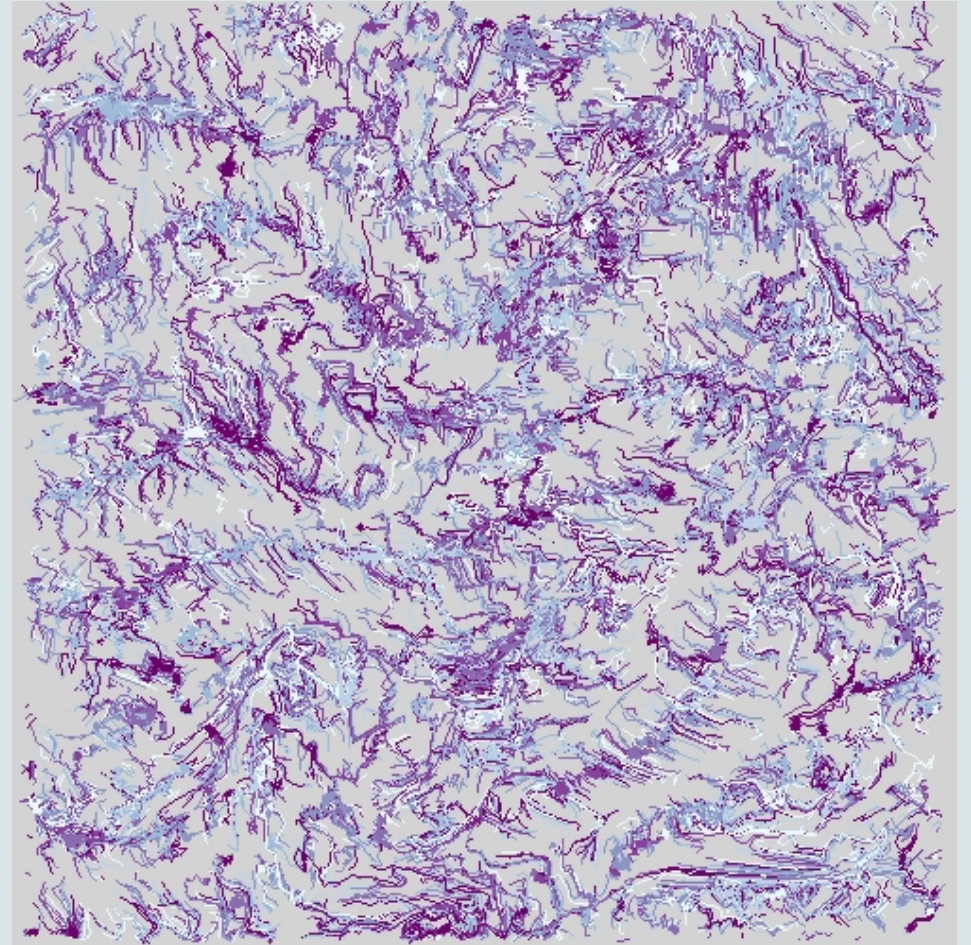
Layers of layers



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Lesser-spotted geoms

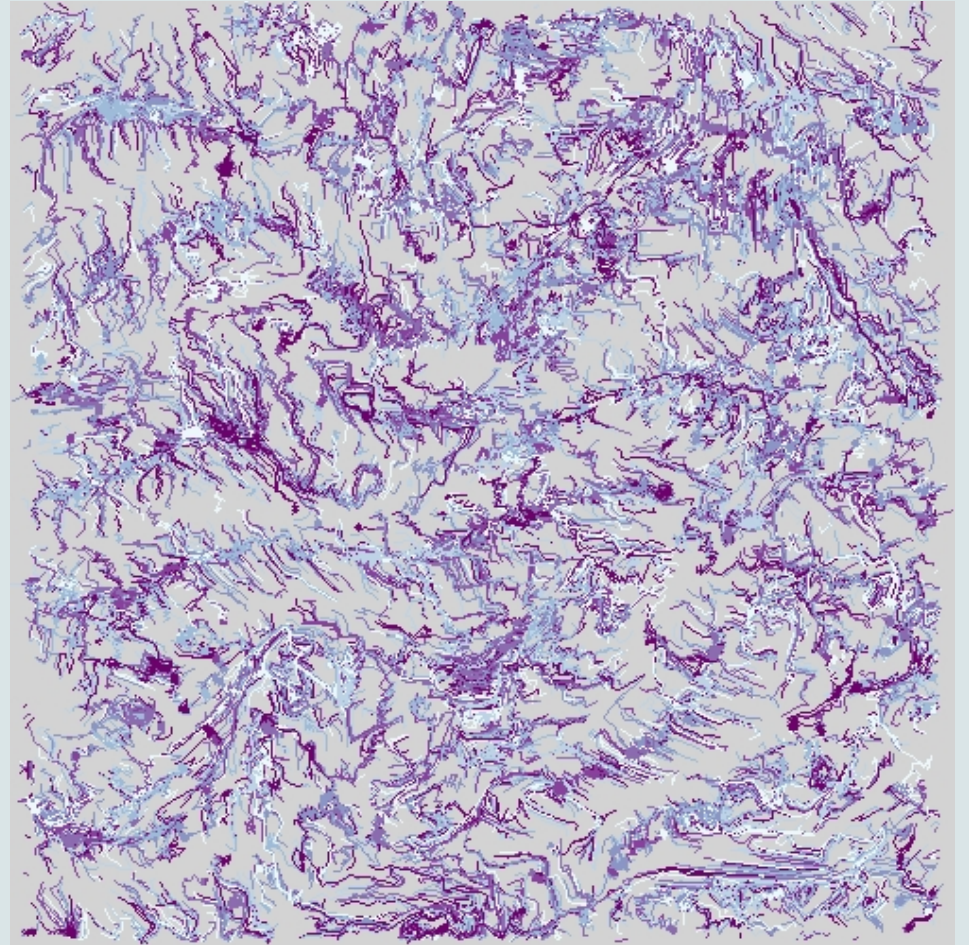
`geom_path()`



Lesser-spotted geoms

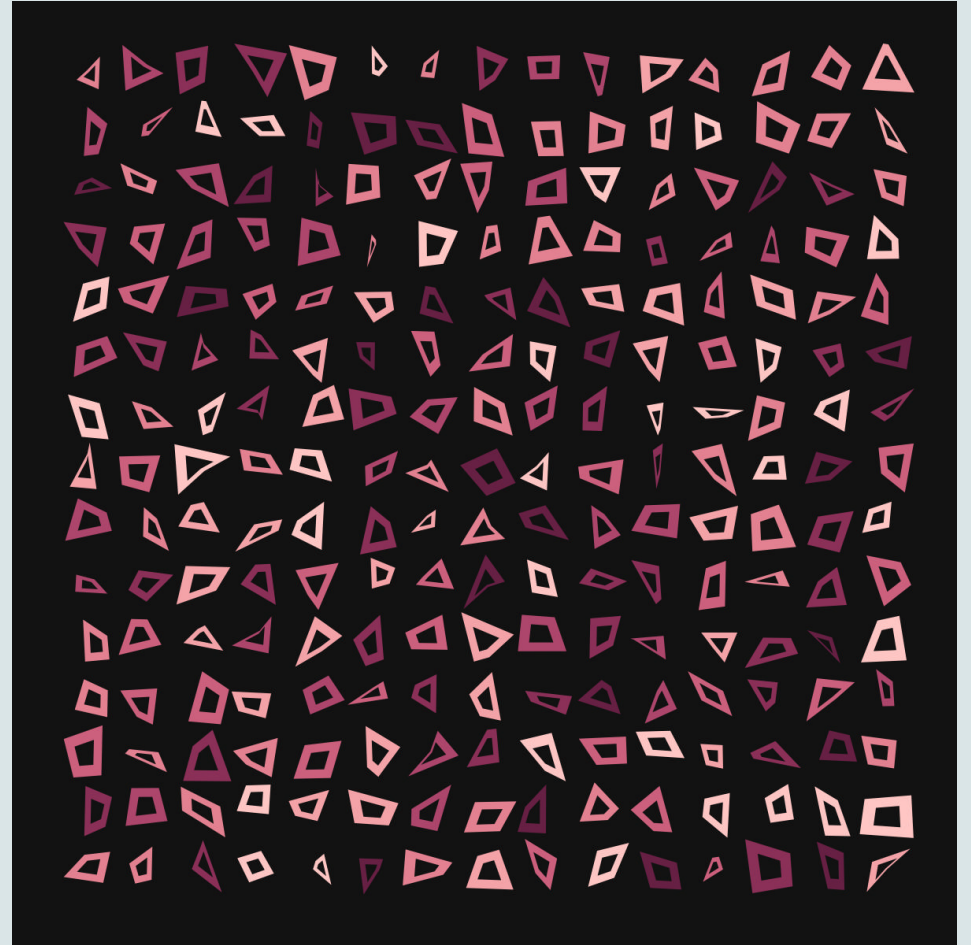
`geom_path()`

- Plotting positions or trajectories
- Arrows in flowcharts



Lesser-spotted geoms

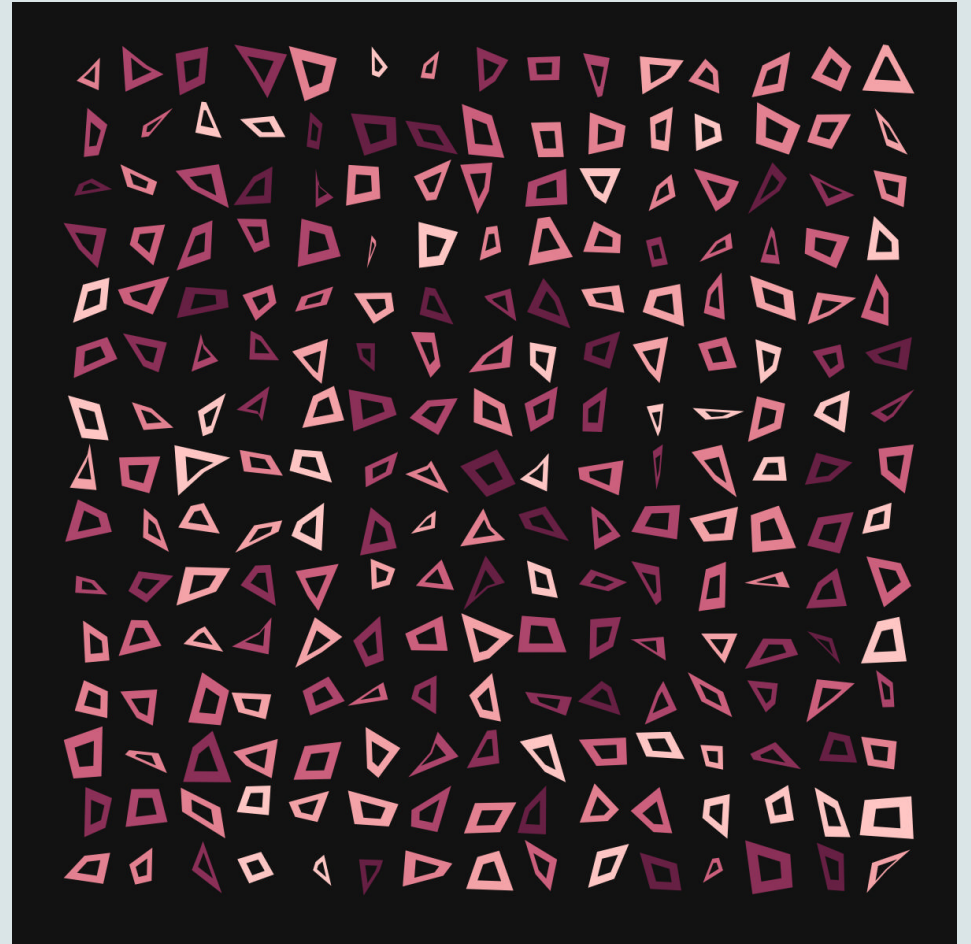
```
geom_polygon()
```



Lesser-spotted geoms

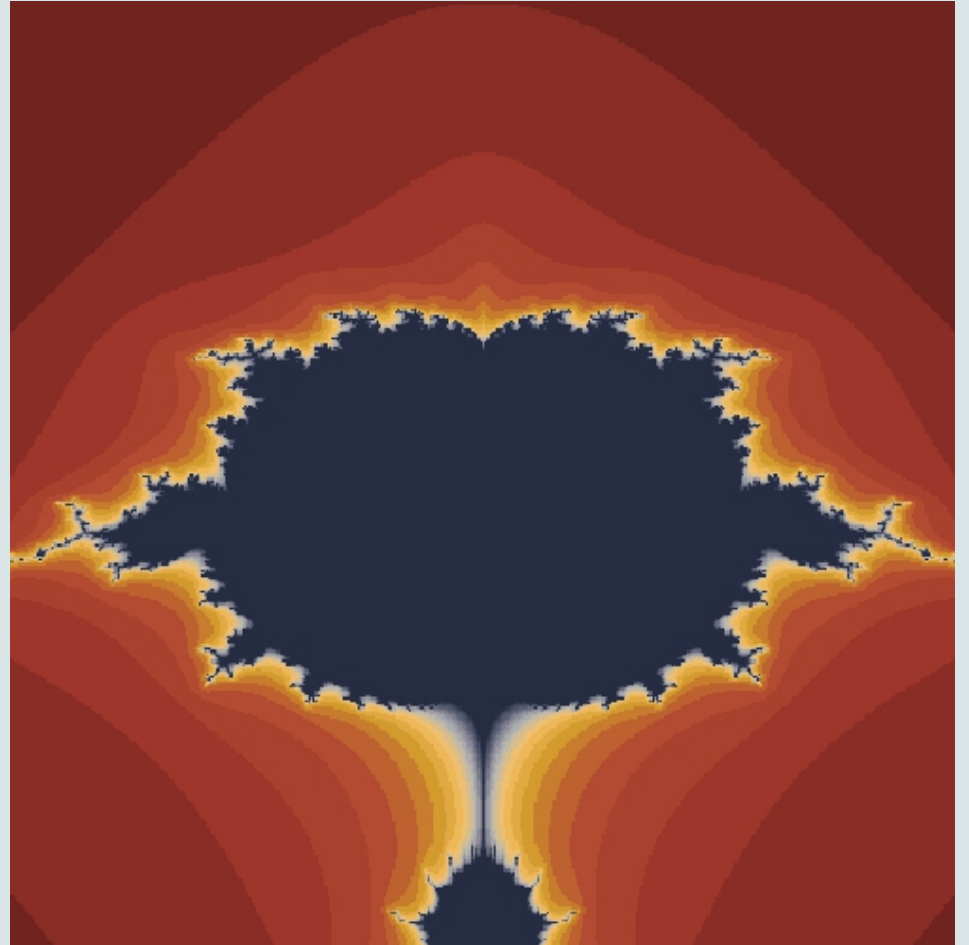
`geom_polygon()`

- Highlighting points that lie within a critical region
- Highlighting areas on maps
- Drawing large arrows / triangles on flowchart diagrams



Lesser-spotted geoms

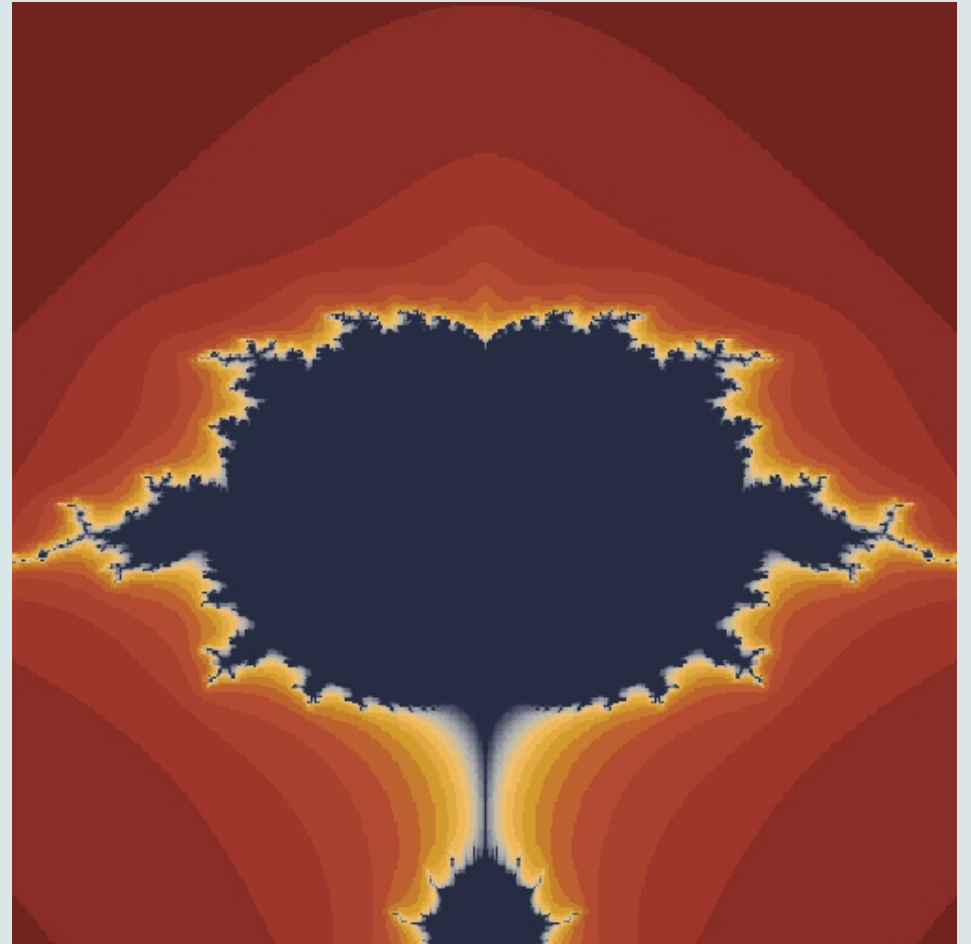
```
geom_raster()
```



Lesser-spotted geoms

`geom_raster()`

- Speed
 - `geom_point()`: 5.5s
 - `geom_tile()`: 1.3s
 - `geom_raster()`: 0.6s
- Alternative to `geom_point()` for (very) high-dimensional data?



Thank you!

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- github.com/nrennie
- nrennie.rbind.io
- jumpingrivers.com

