Seeing with Machines

Collections Within (and Beyond) the Walls of the National Gallery of Art

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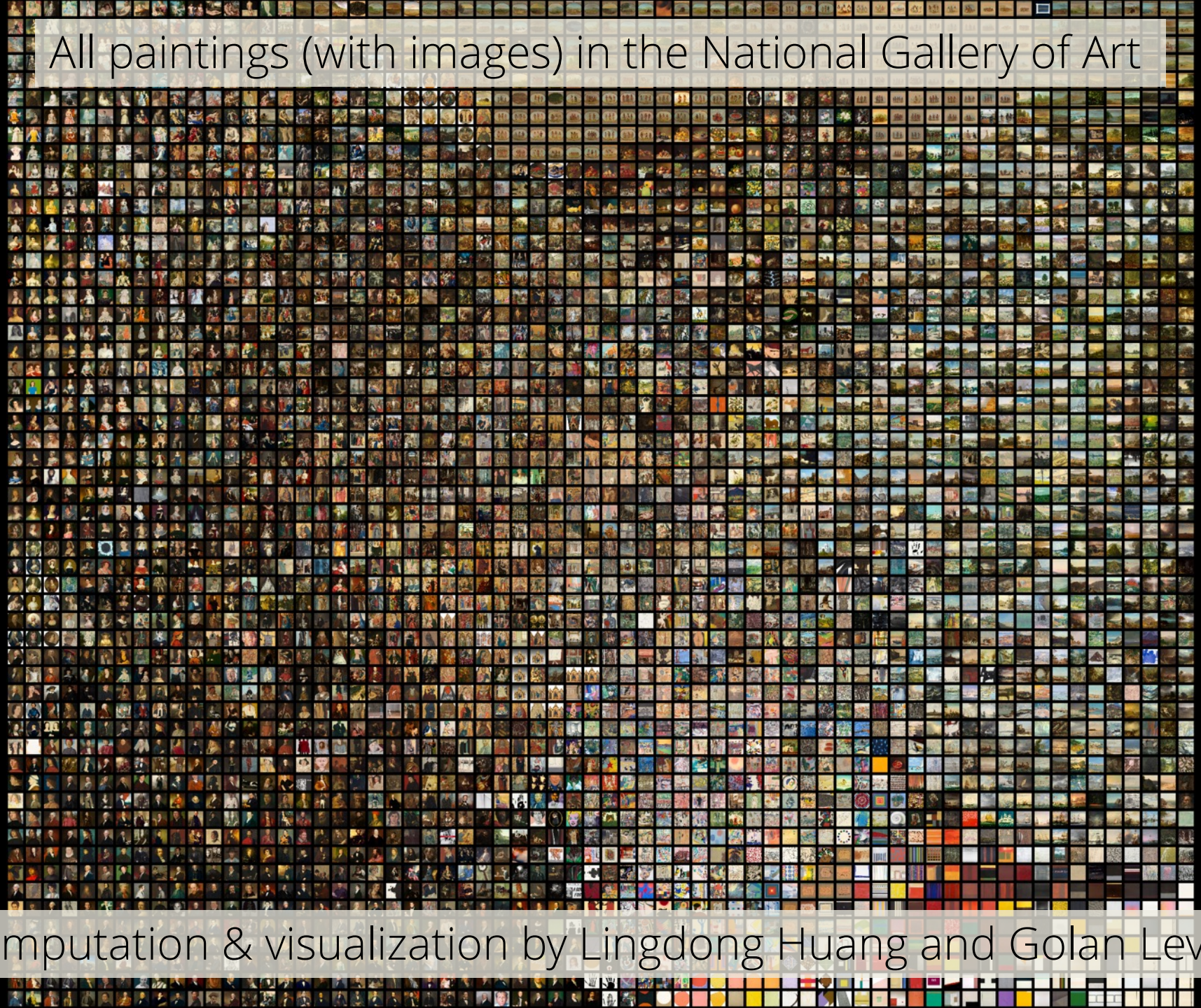
InceptionV3 Neural Network

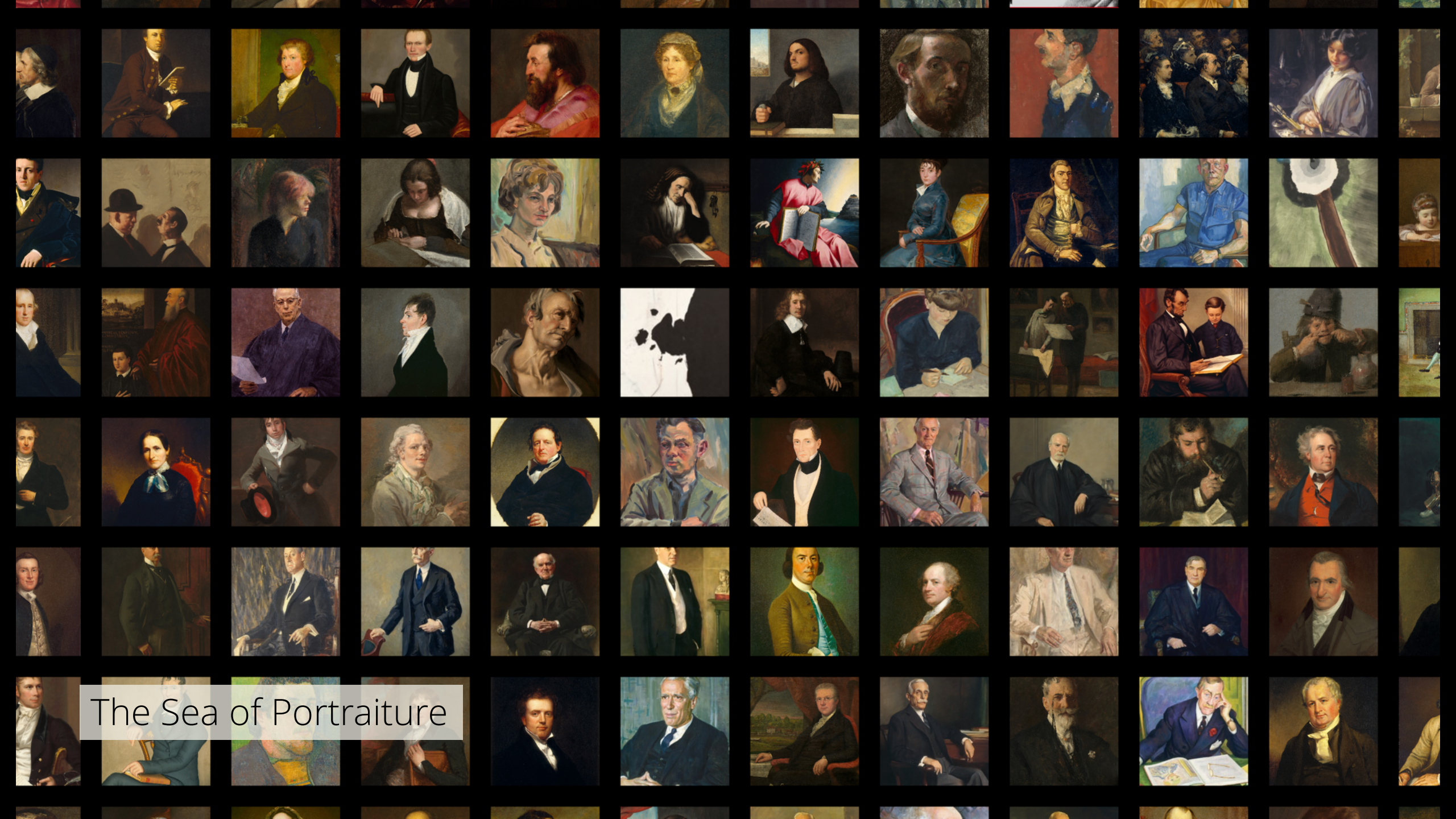
- Neural network designed to recognize objects and textures from photographs
- Instead of asking for simple labels (“horse”, “ball”, “car”), stop it early and instead use its internal calculations to cluster images by something close to “visual similarity”
- An alternate way to organize visual data
  - Think of Aby Warburg’s *Mnemosyne Atlas*, but even more idiosyncratic

All paintings (with images) in the National Gallery of Art



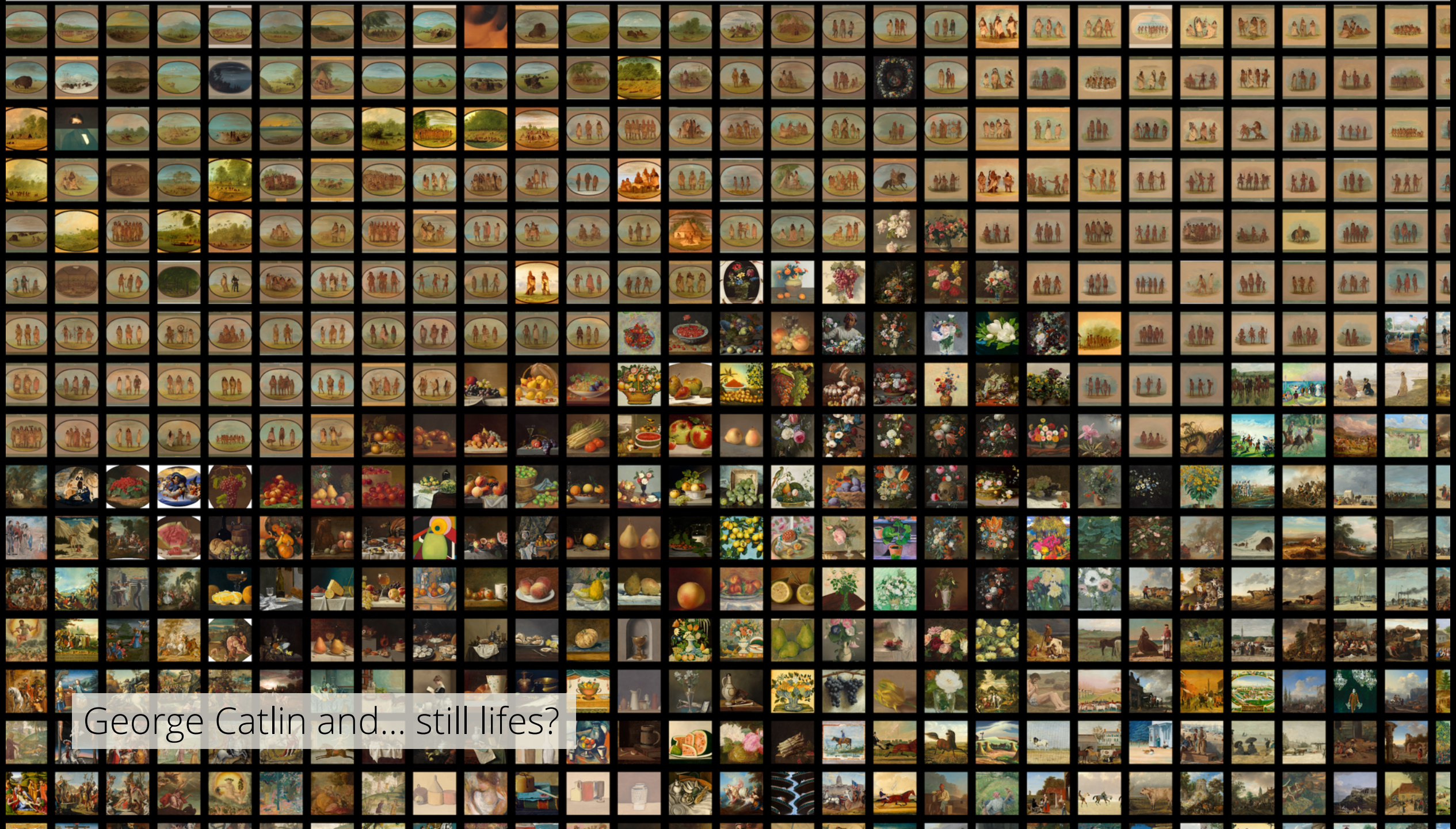
Computation & visualization by Lingdong Huang and Golan Levin

The Color Field Corner


The Sea of Portraiture

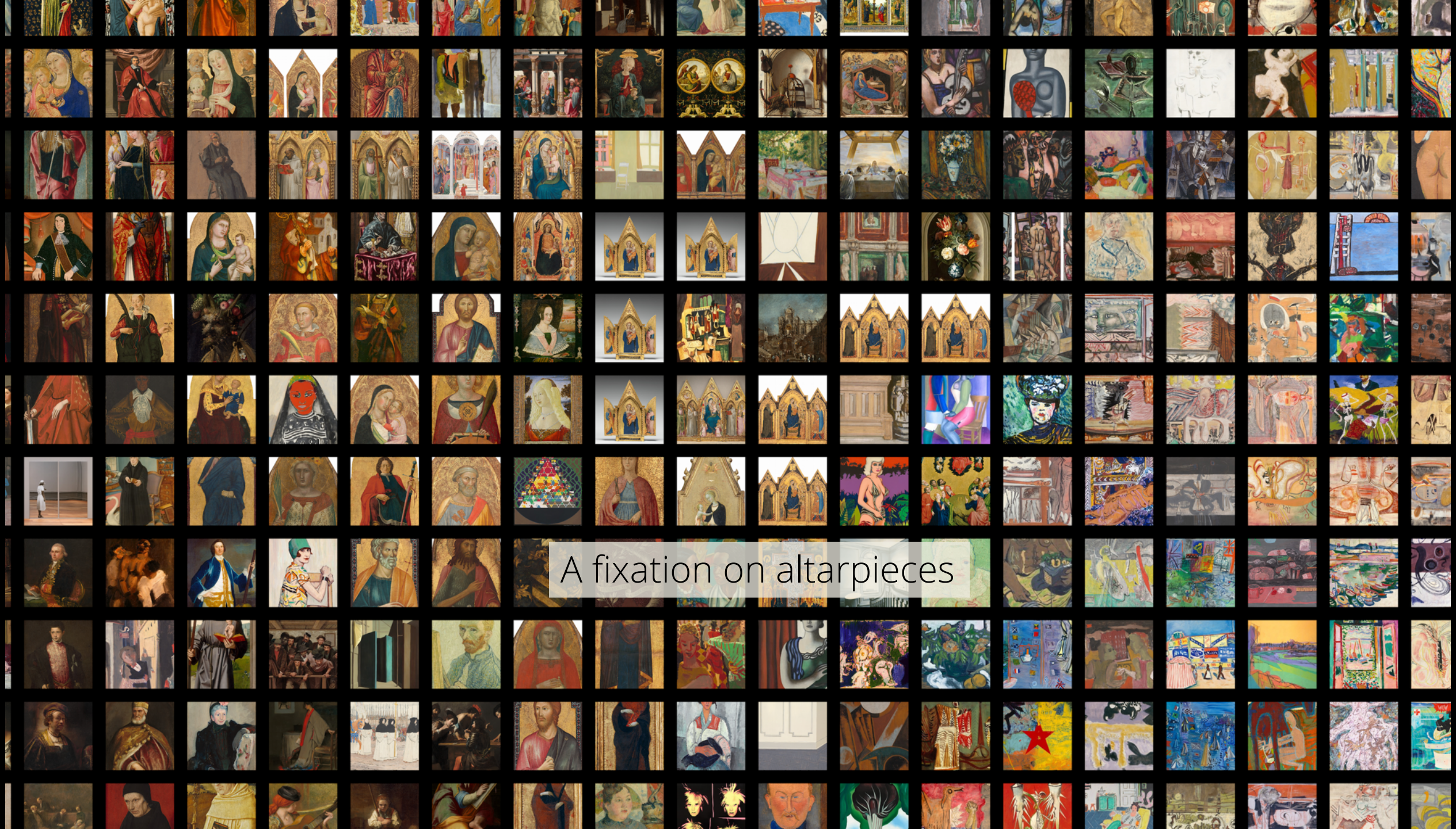
The Sea of Portraiture (plus Robert Motherwell?)

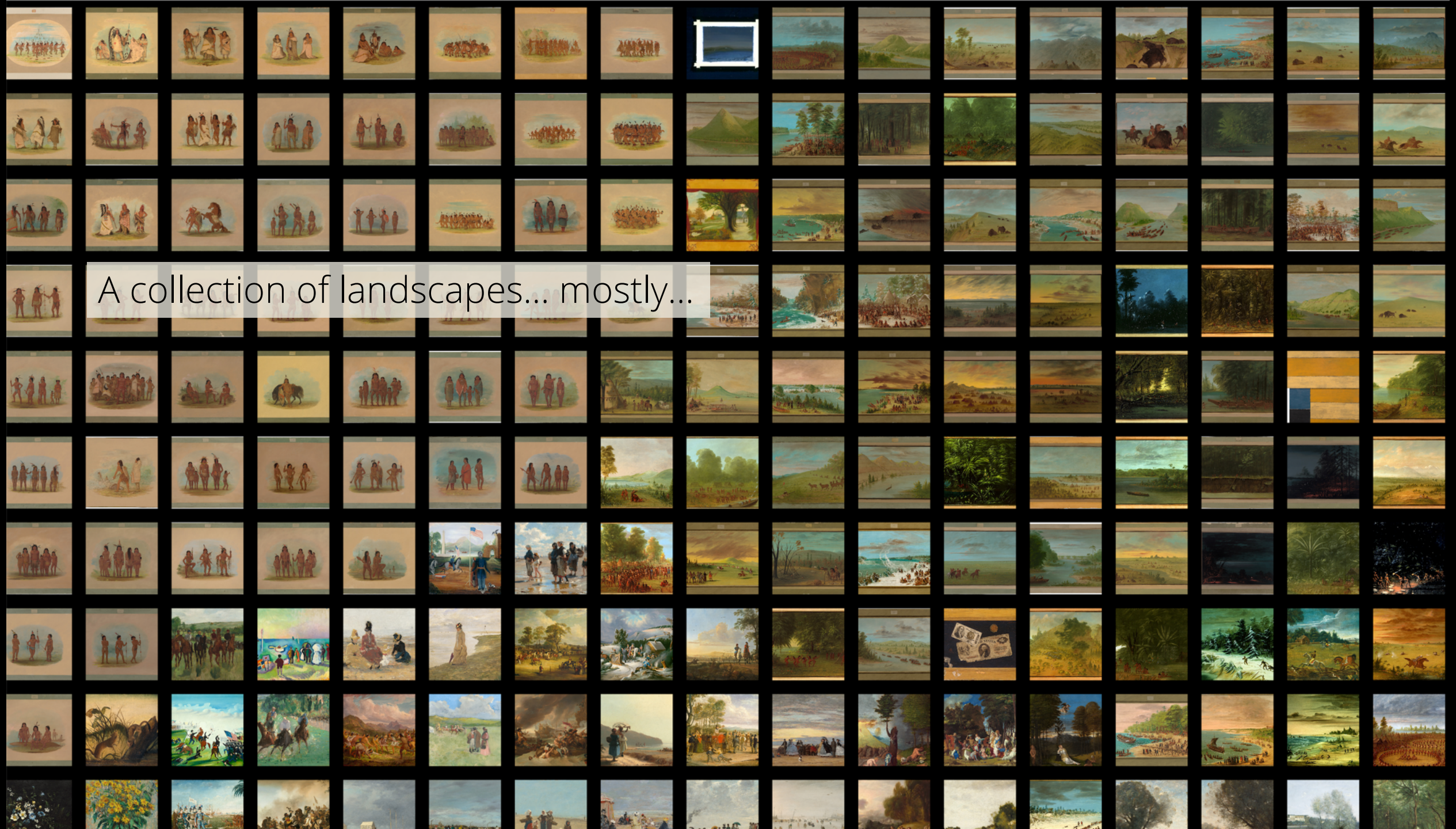
InceptionV3 really wants abstract art to be representative of the real world...

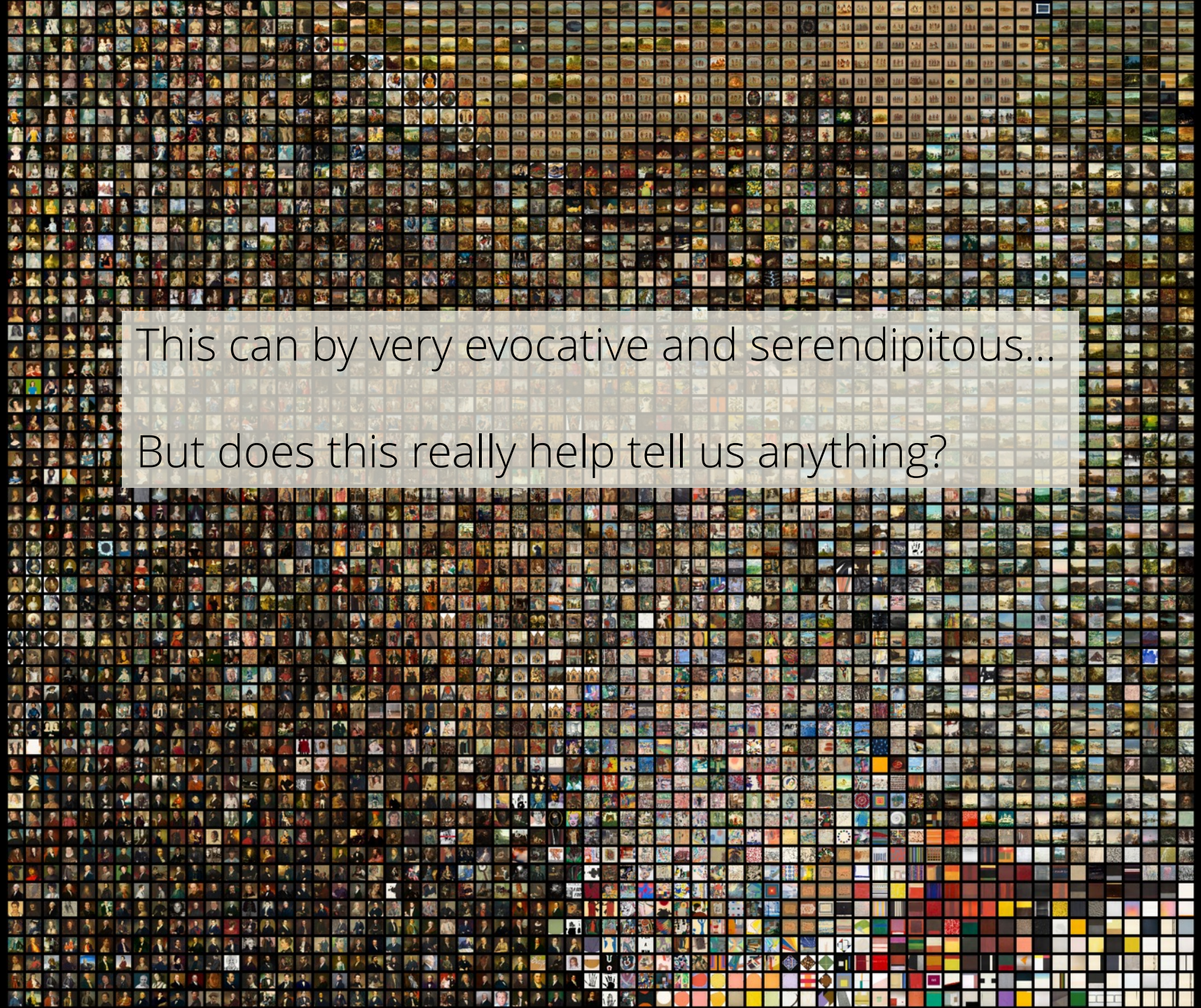

George Catlin and... still lifes?

Jacob van Hulsdonck's *Wild Strawberries in a Wan-Li Bowl* (c. 1620)

Nudes of all kinds


A fixation on altarpieces


A collection of landscapes... mostly...


This can by very evocative and serendipitous...
But does this really help tell us anything?

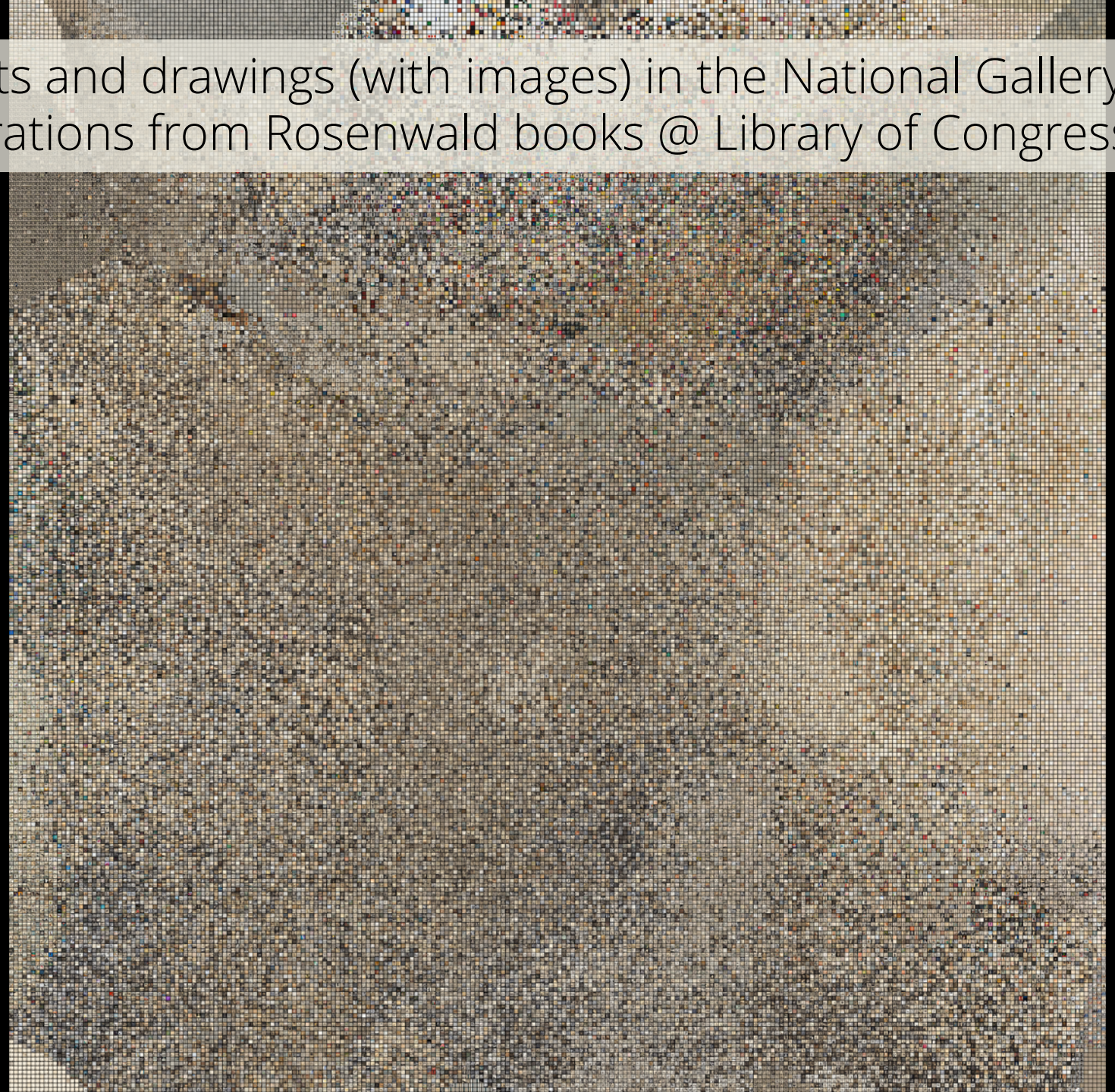
Not only close looking, but also distant viewing

- Can we use this approach to **compare** collections of images at scale?
- The Samuel H. Kress collections (~390 paintings at NGA, over 1,000 paintings in other collections)
- The Rosenwald Collection (~25,000 artistic prints and drawings at NGA, ~250 books at Library of Congress)

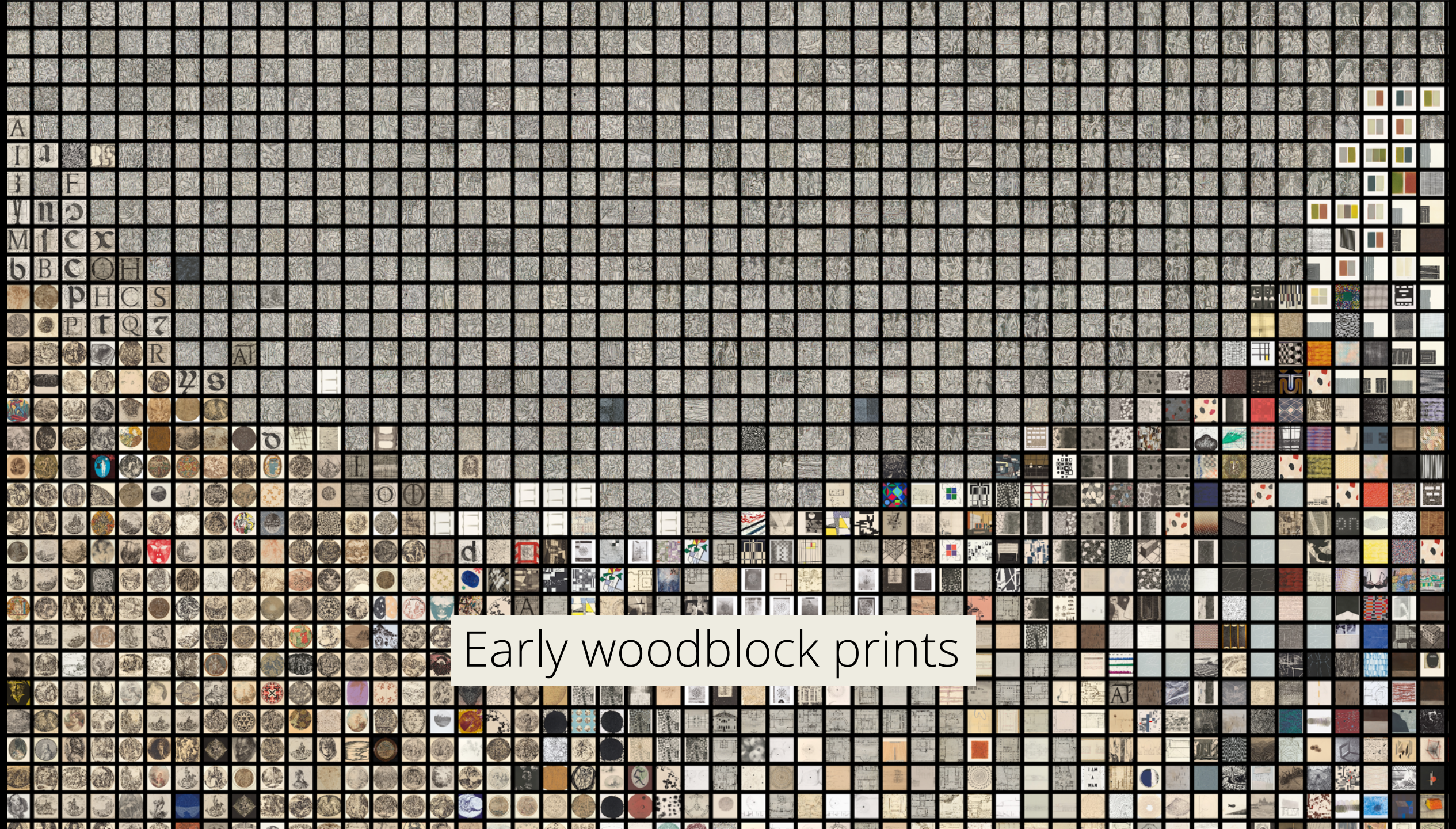
The Rosenwald Collection by medium

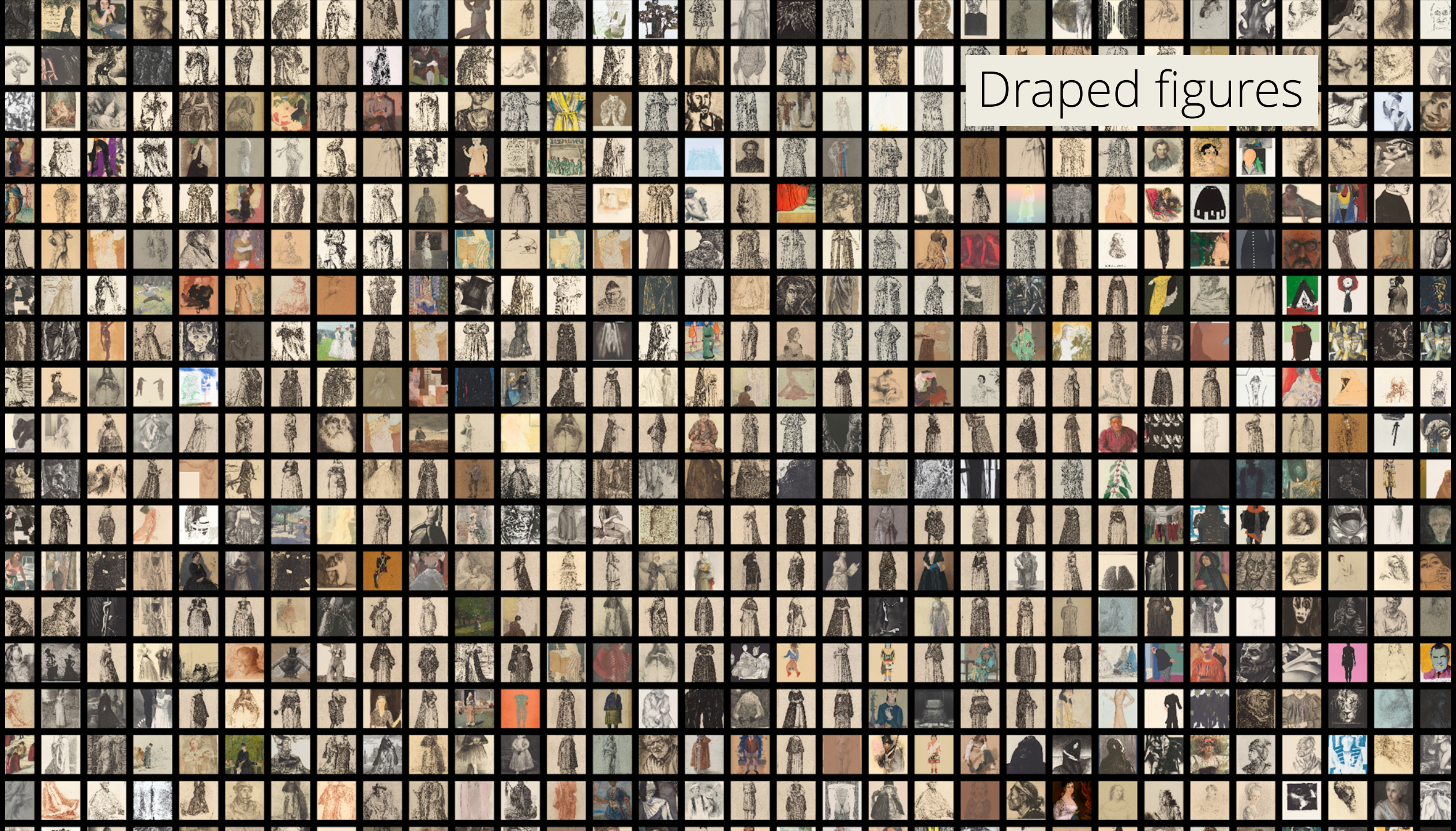
Computation & visualization by Sarah Reiff Conell

All prints and drawings (with images) in the National Gallery of Art
+ Illustrations from Rosenwald books @ Library of Congress

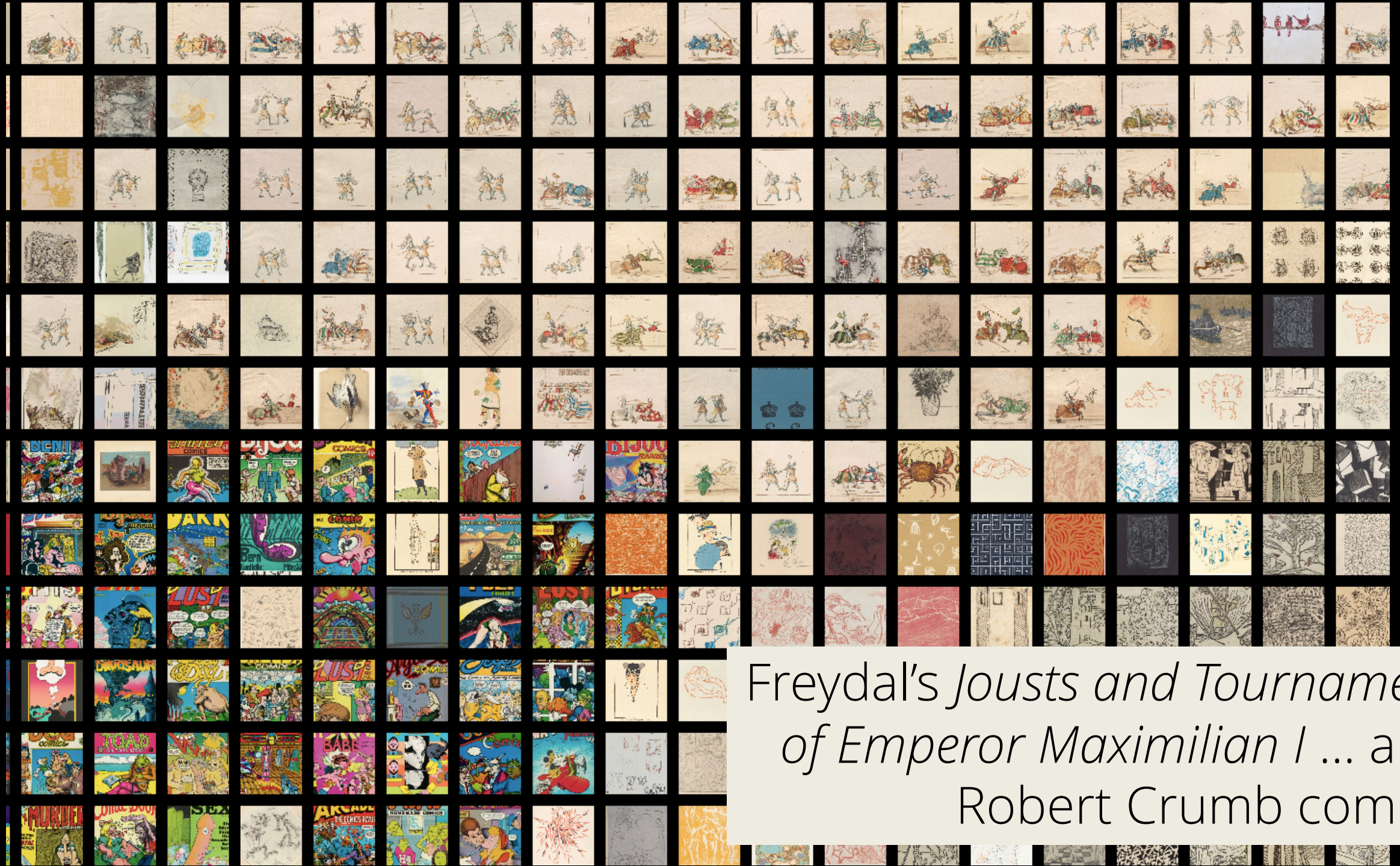


Archipelago of Typography


Early woodblock prints


Draped figures

Palladio's *I quattro libri dell'architettura* (and other geometric graphics)



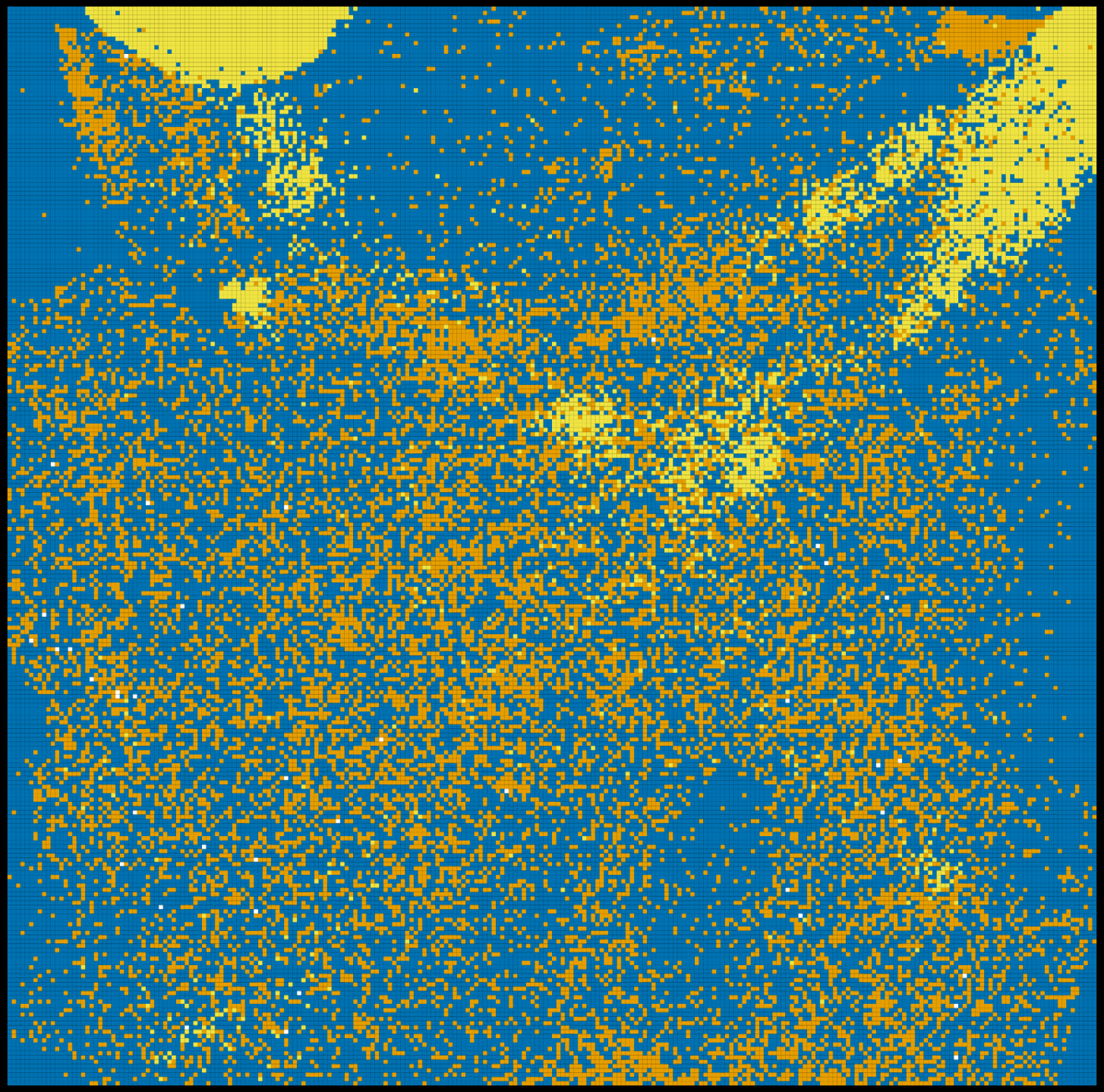
Freydal's *Jousts and Tournament of Emperor Maximilian I* ... and Robert Crumb comics

NGA Prints & Drawings (non-Rosenwald)

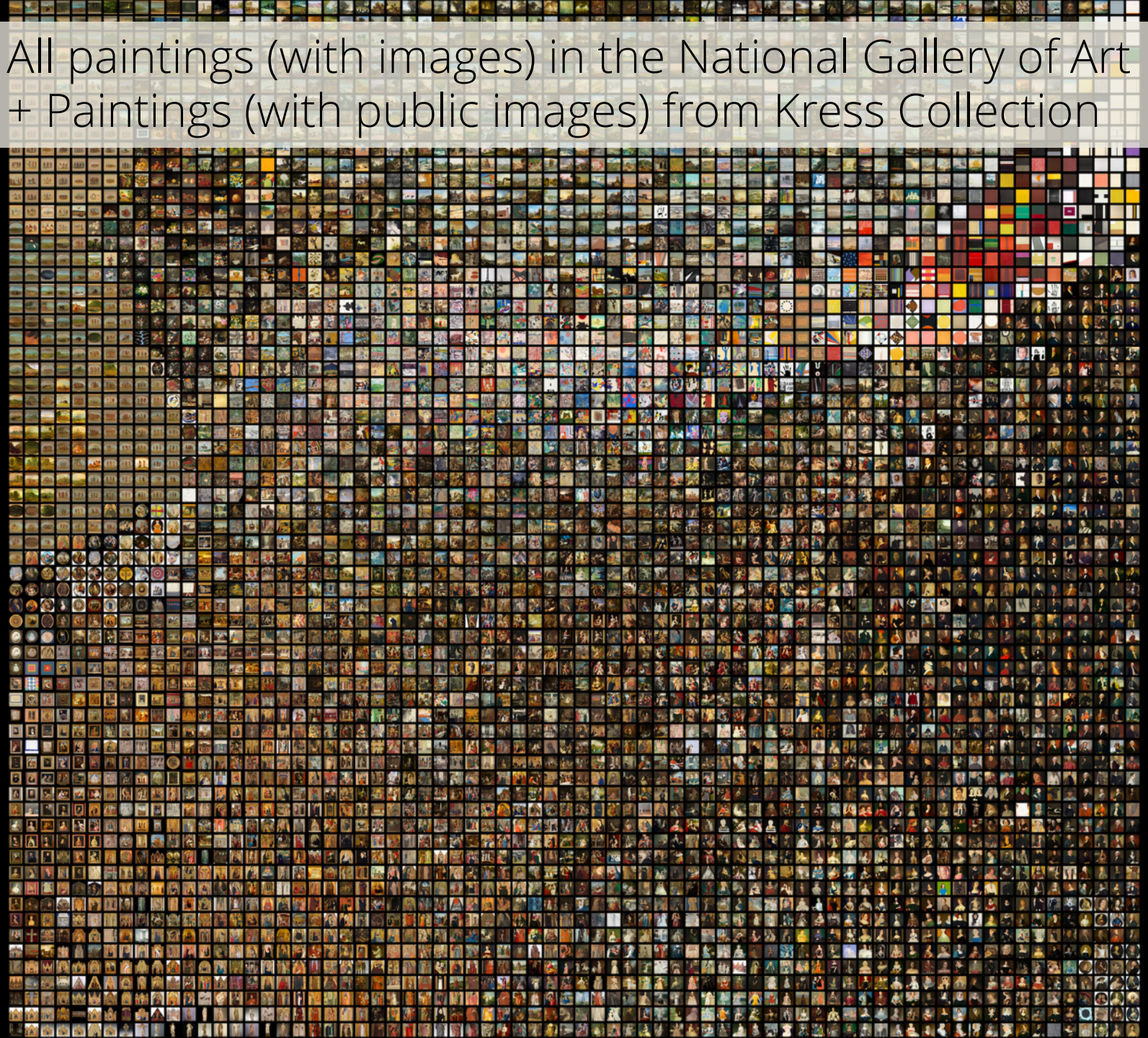
NGA P&D (Rosenwald)

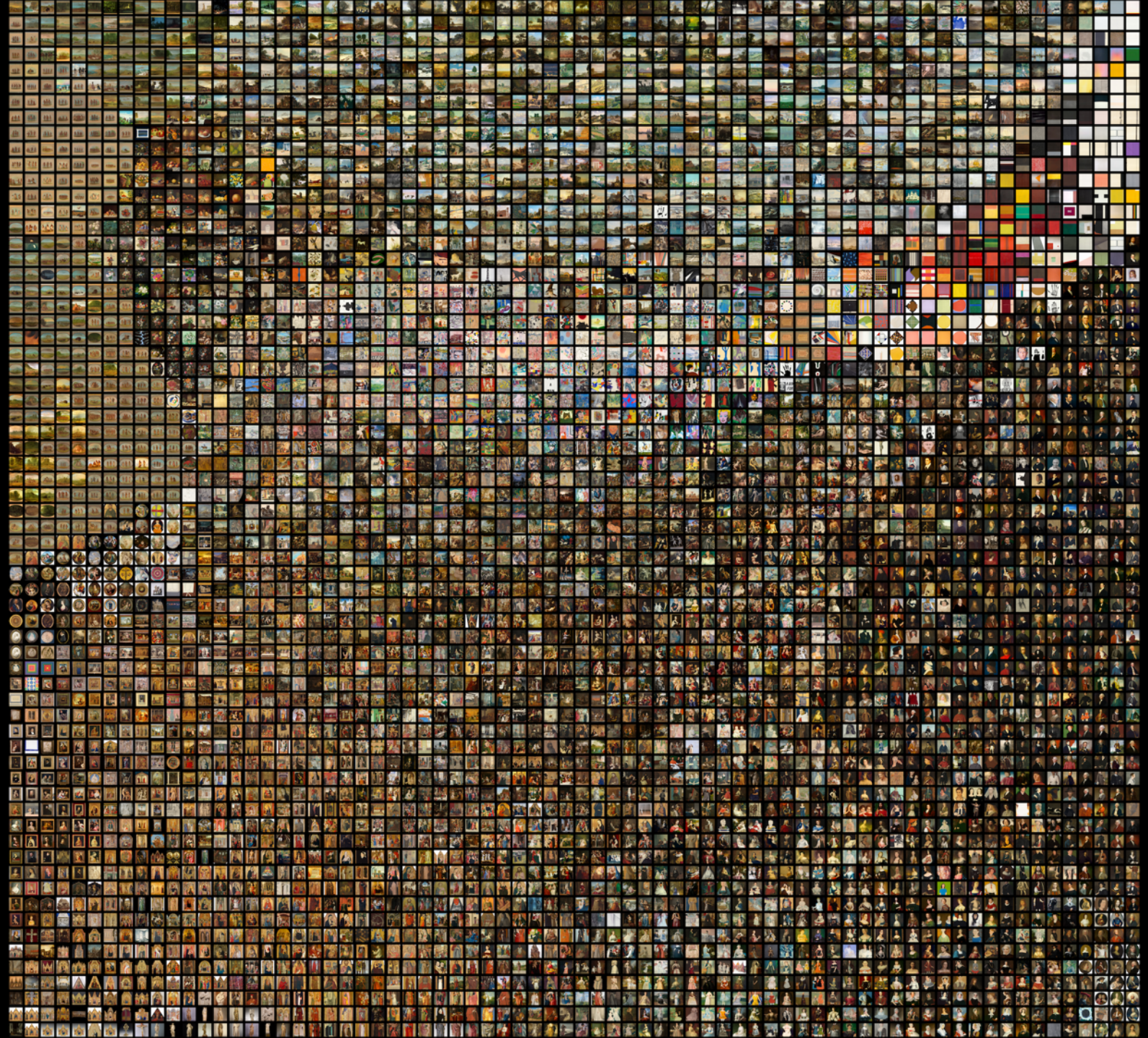
LoC Rosenwald

NGA P&D (Kress)



All paintings (with images) in the National Gallery of Art
+ Paintings (with public images) from Kress Collection



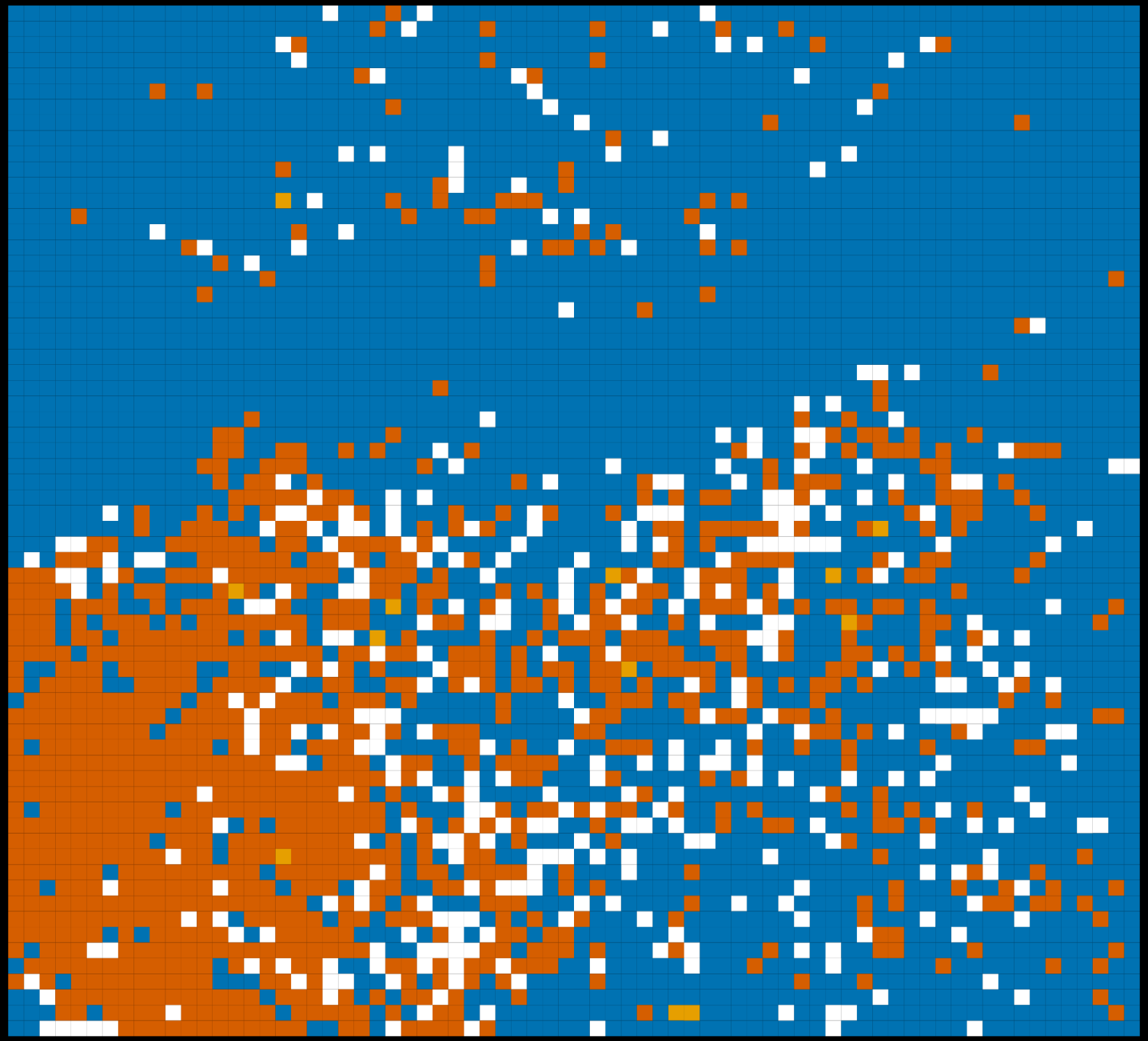


NGA Paintings (non-Kress)

Kress Collection (non-NGA)

NGA Kress Paintings

Rosenwald paintings



What we'll be publishing:

- InceptionV3 feature sets for all the NGA, LoC, and Kress images discussed here, for others to explore different subsets and spatializations of these visual similarities