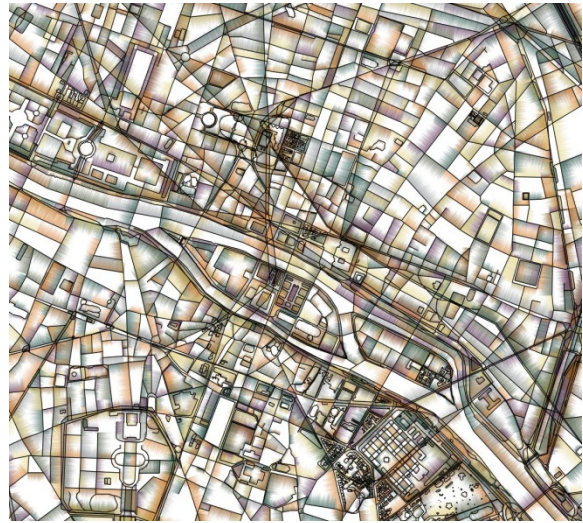


## Project Proposal:

# Interactive Illustrative Map Visualization

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Non-photorealistic rendering and, more recently, illustrative visualization are established sub-areas of computer graphics for some time now and are inspired by traditional artistic and illustrative depictions. This project will look into extending an existing illustrative rendering of geographic map data that takes data from OpenStreetMap and derives map graphs that are then abstracted and, thus, simplified. This process uses a force-directed approach, orthogonalization, progressive meshes, and other simplification techniques. Inspired by the existing Substrate simulation, colored patches are then added by adding “bristles” perpendicular to each original map edge. These bristles contain a constant and a random part and fade out toward the end, creating the effect of water-color patches (see the top-right image and the webpage <http://tobias.isenberg.cc/VideosAndDemos/Isenberg2013VAS>).



In this project, the existing program that is based on Java and Processing will be significantly extended. These changes that are expected at least include the following: In addition to linear segments, the project will add algorithms that recognize primitives other than straight lines such as circle arcs and process them as such. In addition, closed loop elements (lakes, islands, land regions) will be detected and turned all into one direction (so that the illustration is consistent). Another aspect will be the implementation of panning and zooming interaction which automatically queries new data and changes the visualization accordingly. By adding controls that allow showing only higher-level streets, new forms of abstraction are integrated. This also includes investigating including the ability to download data at large scales such as country boundaries and land/continent lines or to visualize point data elements (points of interest). Finally, the project will add an effective undo function to the interface that allows users to return to previous stages of the exploration.

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