REPLY TO STEPINSKI AND DMOWSKA:

Segregation beyond scale and across space: Arbitrary versus objective analysis

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We are pleased with the interest in the multiscale method for the analysis of segregation we introduced. Overall, the comments by Stepinski and Dmowska in ref. 1 provide an opportunity to further clarify and stress a number of points in our original paper (2).

Their principal criticism is that our maps of distortion coefficients do not provide any information about local ethnical composition and population density. This is true. Distortion maps are not designed to replace density depictions of ethnicity, but to visualize the results of a multiscale, spatial analysis. This analysis allows one to capture the complexity of population composition across scale and space. It provides indexes of segregation, the distortion coefficients, which can be mapped, but these are only one output of a much broader analysis embodied by the full set of divergence trajectories. Segregation is a complex issue and we do not think that it may be captured by a single-figure index—or by a single map.

Second, Stepinski and Dmowska (1) criticize our method for failing to capture several segregative enclaves, which are easily visible on density and composition maps. They identify a smoothing and subsequent loss of spatial details. However, this is a misunderstanding of one of the main points of our article. Our method aims at unveiling segregation effects that build up across macroscopic scales in a city. Small enclaves are indeed readily identified in density and composition maps—but we claim that segregation effects are all of the stronger when a divergence in population composition (compared to the whole city) accumulates across scales. It

is this stronger, more pernicious form of segregation that our method seeks to capture, rather than visualizing multiple, small enclaves. To what extent one effectively feels segregated in a multiple-enclave local neighborhood is in our opinion beyond the reach of quantitative analysis and may only be assessed through qualitative studies. The distortion coefficient defined in ref. 2 is, to the best of our knowledge, the only existing objective measure of how a city may be perceived from each of its points.

It is important to recognize that figure 1b in ref. 1 is in fact a classification of grid cells based on disaggregated census tracts. The output is similar to other classifications of census tracts as in ref. 3. What is presented are characteristics of the grid cells: A simple visualization of local information—and a biased one. By choosing limited and arbitrary thresholds both for the classification and for the color scheme on the map, Stepinski and Dmowska (1) bias the portrayal of the real underlying data (furthermore, with a large number of groups the color scheme would become unwieldy). In contrast, our method produces for each point in the city a trajectory that incorporates the data for the whole city, analyzed through the spatial position of the point within the city. In other words, a trajectory and the associated distortion coefficient encapsulate all of the information available, structured by scale and space. The trajectories reflect how different the city will look for someone who engages with it from this point or that point—beyond simple, local peculiarities.

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