Resiliency to resiliency: a sociogeomorphic approach to rivers

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Fluvial geomorphology has often approached the effects of urbanization on river morphology as a 'one-off' event inflicted on a physical system and focused on a single driver: streamflow. In many cases, the river transformation related to urbanization is more complex than a single physical response over a short period, and a range of actors, policy decision, institutions and influences lie behind these effects. A full understanding of 'what happened' to a river following urbanization, and its current characteristics, can benefit from thinking through all of these effects. We illustrate this using the case of Wilket Creek; we think about the morphology as a consequence of the working of a 'socio-geomorphic' system over time to understand how past and future states of the river develop. The history of urbanization, changes to streamflow, and current river morphology were documented, along with a review of the policy, science, design, and fluvial events. These events looked at the changing views of river and valley function and characteristics within the relevant technical and local communities and the ways in which particular 'natural' events are worked back into management approaches. The current morphology of Wilket Creek is the result of a particular and complex combination of urbanization effects, conservation policy, and channel reconstruction and design. The channel morphology is the outcome of fluvial processes but also of the interactions and knowledge of the physical processes and changing approaches to corridor management and design which is influenced as much by fluvial science and geomorphic thought as by the physical history of the system. The physical resilience of the channel is a direct outcome of the management and design conceptions of resilience, while the river is to some extent resilient to these changing ideas. Understanding urban rivers as socio-geomorphic systems helps to see the role of the techno-managerial responses and initiatives within the transformations of the system as an ongoing fluvial response with multiple phases in the past and extending into the fluvial future.

Biography

Danielle completed her Masters of Science in the Geography department at the University of Western Ontario in May 2017. Throughout her Masters, she focused on the effects of urbanization on Wilket Creek, located in the Don River catchment in Toronto. Through fieldwork and other historical analyses, she investigated the complexity of urban channel morphology through a socio-geomorphic lens. Today, she continues to work as a fluvial geomorphologist in urban settings.