

Spreading risk for resilience in the urban system

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First world cities have an unhealthy dependence on the "urban machine"—the modern engineering solutions within their infrastructure—making their inhabitants vulnerable to disaster.

That's according to Victoria University of Wellington's Professor Penny Allan from the School of Architecture, who presented last night on the relationship between spatial design and urban resilience as part of her inaugural lecture—a public address to mark her professorial promotion.

Professor Allan believes a city's design can exacerbate the risks associated with natural disasters due to an over reliance on infrastructure which is designed to be "fail safe, but not safe to fail".

"The infrastructure in the modern city is problematic in that it's designed to operate as a highly connected system of parts, but if one part fails, everything can fail," says Professor Allan.

"Wellington is a classic example of where the design of a city actually contributes to the risk."

Another issue, according to Professor Allan, is an over reliance on top-down governance for both pre-disaster risk management (such as an emphasis on building strengthening) and post-disaster control operations, both of which can increase the vulnerability of communities.

"Many in the design world are now seeing the benefit of spreading the

risk from the perspective of the entire urban system, thereby growing a city's resilience—its capacity to absorb stress and maintain function.

"Past disasters have shown it's virtually impossible for emergency operations and control centres to manage all the citywide impacts. Ultimately, communities will try to, and, therefore, must have the capacity to, organise themselves with little assistance."

For Professor Allan, landscape architecture can help achieve this by designing in ways to utilise a city's landscape potential.

"Landscape is the ultimate urban infrastructure. Many cities were sited because of the landscape's potential, but the rise of engineered systems have reduced reliance on it.

"Designing in ways aligned to the landscape can better accommodate uncertainty, take the pressure off physical [infrastructure](#), and absorb disturbances through greater flexibility.

"Rather than seeing landscape as a distinct collection of decorated spaces around buildings, the city's roads, lanes, carparks, parks, squares, and vacant lots should be viewed as an interconnected matrix—one which can be designed for social, environmental and aesthetic benefits, as well as resilience."

Professor Allan notes how San Francisco's wide gridded streets, hilly topography and network of parks contributed to the recovery process after the 1906 earthquake and fires, and, in the absence of any government control, the landscape determined how people congregated and organised after the 2010 earthquakes and tsunami in Chile.

"Design can play a significant role in a [city's](#) resilience by complementing top-down management approaches and bottom-up

community initiatives," says Professor Allan.

Provided by Victoria University

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