From engineering to evolutionary, an overarching approach in identifying the resilience of urban design to flood

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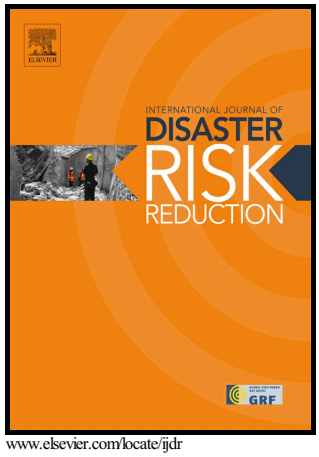

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PII: S2212-4209(18)30162-6
DOI: https://doi.org/10.1016/j.ijdrr.2018.02.009
Reference: IJDRR791

To appear in: *International Journal of Disaster Risk Reduction*

Received date: 5 February 2018
Accepted date: 5 February 2018

Cite this article as: Mohanad Abdulkareem, Hisham Elkadi and Mohanad Bneane, From engineering to evolutionary, an overarching approach in identifying the resilience of urban design to flood, *International Journal of Disaster Risk Reduction,* https://doi.org/10.1016/j.ijdrr.2018.02.009

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Abstract

Resilient urban design has become an essential theme for cities to withstand the rapidly escalating natural and human-induced disasters, yet cities and their infrastructure are becoming vulnerable and more threatened as the flood protection measures are still following the same line of thinking of flood control structures. There is an urgent need for new approach for resilience steaming from the urban form itself, beyond the focus on construction-based infrastructure like dams, levees and or channelization.

This paper is presenting an introductory sense of urban form resilience building on the resilience definition of maintaining the minimum functionality of a system and how this conception can systemically corresponds with resilience perspectives. The aim is to develop a measurable sense of urban design resilience. Hence, the paper carried out theoretical investigation into two complementary domains; the urban design and resilience thinking. Finding out the urban form most essential commodity and to which one of resilience perspectives it could possibly associate to achieve resilient urban form. The paper is aiming at establishing a common ground where the two domains can possibly congregate. It also suggests possible effective future approaches using the principles of ecological and evolutionary resilience.

Key words: Ecological resilience; evolutionary; urban design; pluvial flood; accessibility.

1. Introduction

"Floods are acts of God, but flood losses are largely an act of man." (Gilbert White, 1945)

Natural disasters including flooding, earthquakes and extreme weather events have escalated in recent years and increasingly capture attention on a global scale. Resilient urban design has become an essential theme for cities to withstand disasters, yet cities and their infrastructure are becoming vulnerable and more threatened; and flood protection measurements are yet to adapt their approach to the principles of resilience found in the natural world. Conventional structures of flood protection are increasingly questioned among academics, decision makers and communities, and new approaches are urgently needed at local and regional scales. In this sense, Hall et al. (1997) affirmed that explicit assessment of risks has in the past tended to be limited to the appraisal of major decisions to invest in flood defence infrastructure.