


## Chapter 3

# Evaluating Collective and Creative Problem–Solving Approaches and Tools for Wicked Problems

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### ABSTRACT

*Societies and businesses are faced with problems that contain too many new, unknown, and unintended consequences and even more so as humans have to face and deal with more complexity created by the Fourth Industrial Revolution. These problems have become ‘wicked problems’. Creativity is needed to solve problems as it allows people to create new ideas by using their mental toolkit, creative characteristics and behaviours. It is possible to solve wicked problems using collective and creative problem-solving approaches and tools. This means that people need to work together to generate creative ideas to find novel and breakthrough solutions. To try and find a “silver bullet” to solve wicked problems, various problem-solving approaches and tools were evaluated and it became evident that a combination of approaches supported by various tools might lead to solving wicked problems collectively and creatively.*

### INTRODUCTION

The Fourth Industrial Revolution has created a world where knowledge alone is no longer power or a guarantee for successful problem-solving. This will become even more so in the Fifth Industrial Revolution and beyond where knowledge and information will be available immediately as required to the majority of people globally. Societies and businesses are faced with problems that contain too many new, unknown and unintended consequences and even more so as humans have to face and deal with more complexity. Rumsfeld (2002) cited in Burman, Aphane and Mollel (2017, p. 52) added to the complexity view when he stated that “*there are known knowns; these are things we know we know. We also know*

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*there are known unknowns; that is to say, we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know".* Peter (1969) in Ratcliffe (2017) asserts that "*some problems are so complex that you have to be highly intelligent and well informed just to be undecided about them*" which links to Rumsfeld comment that there are "*...unknown unknowns – the ones we don't know*". Therefore, any standardized and tested strategies, assumptions, patterns, and belief systems used in the past by societies and businesses are no longer suitable to solve these complex problems (Griffiths & Costi, 2019). These problems have become 'wicked problems'.

'Wicked' is used to indicate that the problem is resistant to resolution. The term "wicked problem" was first created by Rittel and Webber in 1973. Conklin (2007) cited by The Pennsylvania State University (2019, p. 1), states that Rittel and Webber's explanation of wicked problems shows that these type of problems cannot be solved by using the traditional linear modes of problem-solving because there is normally no agreement on the definition of a wicked problem by the people trying to solve it. In addition, clear solutions are not easy to develop for wicked problems due to the wide array of possible solutions and trade-offs associated with each possible solution. The wicked problem also has multiple potential causes, jurisdictions, stakeholders and regulators or implications.

Trevor Manuel, a former minister in the South African parliament, spoke at the University of the Western Cape (UCT) and stated that "*creativity and the coming together of different skills sets are what are needed to take on the "wicked" problems*" and that "*creative collaboration*" is the only antidote for 'wicked' problems" (Calata, 2013, p.1). This is also echoed by Griffiths and Costi (2019) when they wrote that what is needed to solve wicked problems is creativity. They explain that creativity is a new power because conventional thinking is no longer suitable to solve present and future challenges, especially wicked problems. Creativity is needed to solve problems as it allows people to create new ideas and minimize selective, reactive and assumptive thinking. Griffiths and Costi (2019, pp. 25-26) explain these common thinking errors as "*Selective thinking is the tendency to validate certain ideas and discount others. Reactive thinking is the tendency to react to existing influences, events or ideas, often too quickly. Assumptive thinking is the tendency to accept a belief, convention or idea as true, often with no proof (usually based on past experience or "common knowledge")*." These common thinking errors occurs when facts are ignored, people think there is only one solution to a problem, people expect certain outcomes or they get too attached to an idea, and people prefer to opt for inaction instead of action to avoid possible negative aspects.

Another critical aspect to consider in tackling complex and wicked problems are the fact that one person cannot solve these type of problems on their own. Catmull (2008) cited in Bridges (2016: 9) explains why in that "*Creativity involves a large number of people from different disciplines working effectively together to solve a great many problems.*" This can be referred to as 'collective creativity' where the creative activity emerges from the collaboration and contribution of many individuals to create new solutions. This can be linked to the concept of 'Wisdom of the Crowds'. The benefit of the concept is that big crowds make smarter decisions than any individual (Goete, 2016). So the saying '*two brains are better than one*' can apply to crowds in that the collective brains (wisdom) of crowds can lead to highly creative and breakthrough wisdom. Collective creativity is therefore required as it focuses on the importance of producing a variety of possible solutions collectively by individuals connected by the network to solve complex and interdisciplinary problems (Inakage, 2007).

The main objective of this chapter is to identify and evaluate various problem-solving approaches and tools to determine if these will be useful to solve wicked problems. To achieve this objective, the following secondary objectives were set to

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