

# Chapter 7

## Problem Solving Using Soft–Math (SM) Methodology

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### ABSTRACT

*There may be times when we want an organization or a community to conceive a problem in a common manner. Doing so is easier said than done. In the Western context, explanations of how to think about complex, social (soft) problems generally draw from Plato's perfect forms or Aristotle's reasoned argument. However, pragmatism refers to the linguistic concepts we have patterned from our past experiences. This chapter develops this stream of pragmatism and explains how it can be used to design a soft-math (SM) approach which will enable debate amongst concerned parties. This mathematical way of thinking, when applied in a soft manner, has the potential to lead to various social phenomena. A homeland security decision making situation is presented as a demonstration.*

### INTRODUCTION AND PROBLEM STATEMENT

In environments of conflicting stakeholders and constant change, decisions need to be made that frequently demand creativity. What is a reasonable explanation in reaching a solution in one community may be misunderstood in another. These situations are known as soft problems, such as: How to manage disaster planning? How to manage terror suspects? How to respond to hostile threats? In such situations, problems need to be contextualised in ways which are relevant to different alternative communities of stakeholders. Any decision making process needs to start by using a soft-math (SM) approach which will enable debate amongst concerned parties. This mathematical way of thinking, when applied in a soft manner, has the potential to lead to various phenomena in the messy, wicked realm of social problem situations. For example, militant groups might justify a knowledge claim even if it is significantly different from established beliefs across different cultures and communities; the current conflict between the

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West and Islamic militants is one illustration among many. Interestingly, in this instance, the militants are also at odds within their own community.

Western thought has been significantly impacted by Plato's perfect forms (Toulmin, 1972). The platonic view is to encourage perfect forms to reveal the perfect state – the search for an ideal state in community, government or environment. This has hints to spirituality and may be appealing to many Christian theologians. The decision making process becomes a process of attempting to match our actions to an ideal, explaining our actions as the quest for a perfect form, or perhaps an imperfect attempt to achieve our ideals. The 'perfect form' provides the 'how to act', with our actions corresponding to some ideal. Organizational visions are one example. These draw from Plato's perfect forms; we think by comparing to some ideal.

Anderson (2003) highlights there is a distinct difference between the traditional definition of ideals and ideas. Ideas are typically new systems or processes. An innovator can produce a drawing or sketch of a new invention. Innovators can also develop ideas that are not visions and that cannot be imagined, such as the idea of how to be more 'agile'. Perfect forms suggest something that is against that which all imperfect forms can be compared, against contradiction. The opposite of contradiction would be something similar to ordered hierarchy. This would encourage power elites. However, who is to decide and determine the perfect form? Of course, insisting on one set of decision criteria (concepts) may restrict alternative perspectives from those expected to participate. It may also restrict creativity.

Nietzsche (1873) and Hegel (1956) explained our thoughts against visions or spiritual apparitions. More recently, other philosophers have aligned with this way of thinking (Rorty, 1982; Putnam, 2000). Their ideas were largely impacted by Aristotle's reasoned, dialectical argument to provide their justification as a way of thinking. They argued against perfect forms to provide a different explanation of what needs to be known and how to act. Rorty (1982) proposed what we think and do is not about comparing ideals, but rather a process of creating knowledge about our physical and social world through reasoned debate. Thinking to produce knowledge claims can be seen as a process of social interaction or justification to each community of sceptics.

Menand (2001) provides a useful historical discussion of pragmatism. This chapter places more emphasis on a pluralistic thread of pragmatism in its aim to design a system of concepts used to make and evaluate decisions. Menand (2001) described the meetings of the early pragmatists as a search for a system of reasoning. While it is generally agreed is that pragmatism started with Peirce (1878), Rorty (1982) can be seen as the more modern advocate of a pluralist pragmatism. He suggested the need for a process of decentralized planning and decision-making.

This approach to thinking is a process of using a coherent set of concepts we want as solutions to our problems and therefore our conduct. For example, we may decide to use the concepts of community, power and growth for decision criteria. Each provides an alternative perspective of the problem situation. This epistemology therefore provides reasonable justification for a pluralist approach to SM methodology.

Rorty's (1982) description of pragmatism does not attempt to uncover a single best interpretation of the problem situation. Rather, it attempts to understand the problem by constructing justified interpretations of concepts. Problems can occur, which require multiple concepts. Pragmatism sees thinking as reflecting on physical events through a lens. To use a classic illustration, the earth was once understood by using the concept of 'flatness'. Understanding the same experience using Newton's law of universal gravitation reveals a different insight.

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