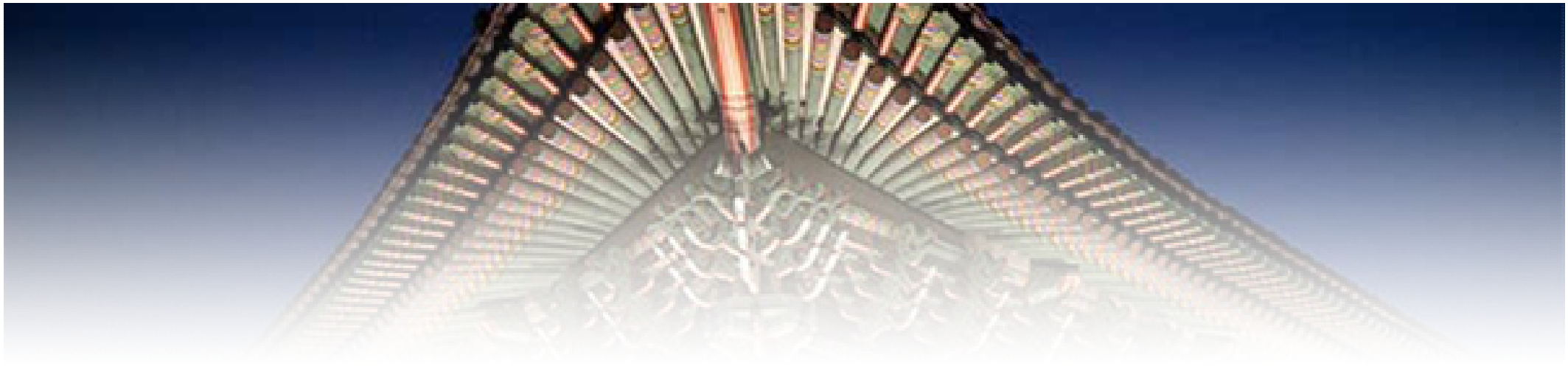

A study of analogy between TRIZ and Fuzzy Logic Control

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Contents

1. Motivaion

TRIZ is philosophy or methodology ?

IF TRIZ is a methodology

THEN there are similarities with engineering problems solving methodology.

Fuzzy Logic Control (FLC) is a theory

of control engineering for problem solving in plant.

Problem solving framework in TRIZ and Fuzzy Logic Control will be compared.

2.1 TRIZ solution framework

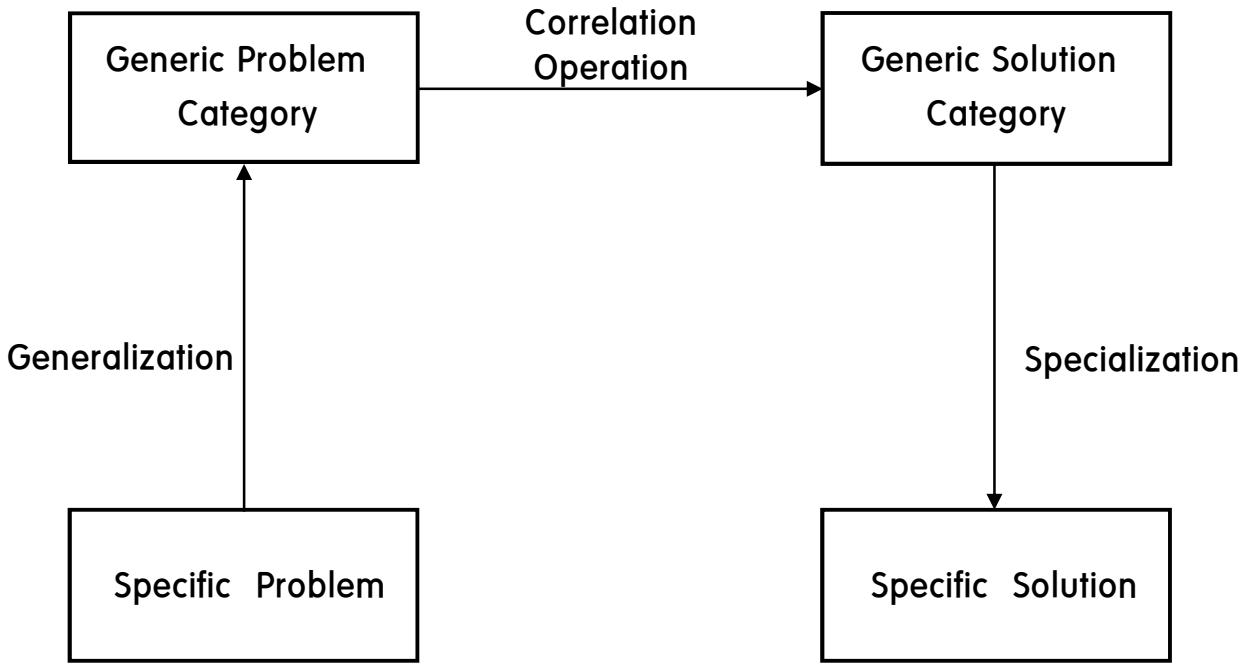

Fig 2.1.1 The general TRIZ model for problem solution

2.1 TRIZ solution framework

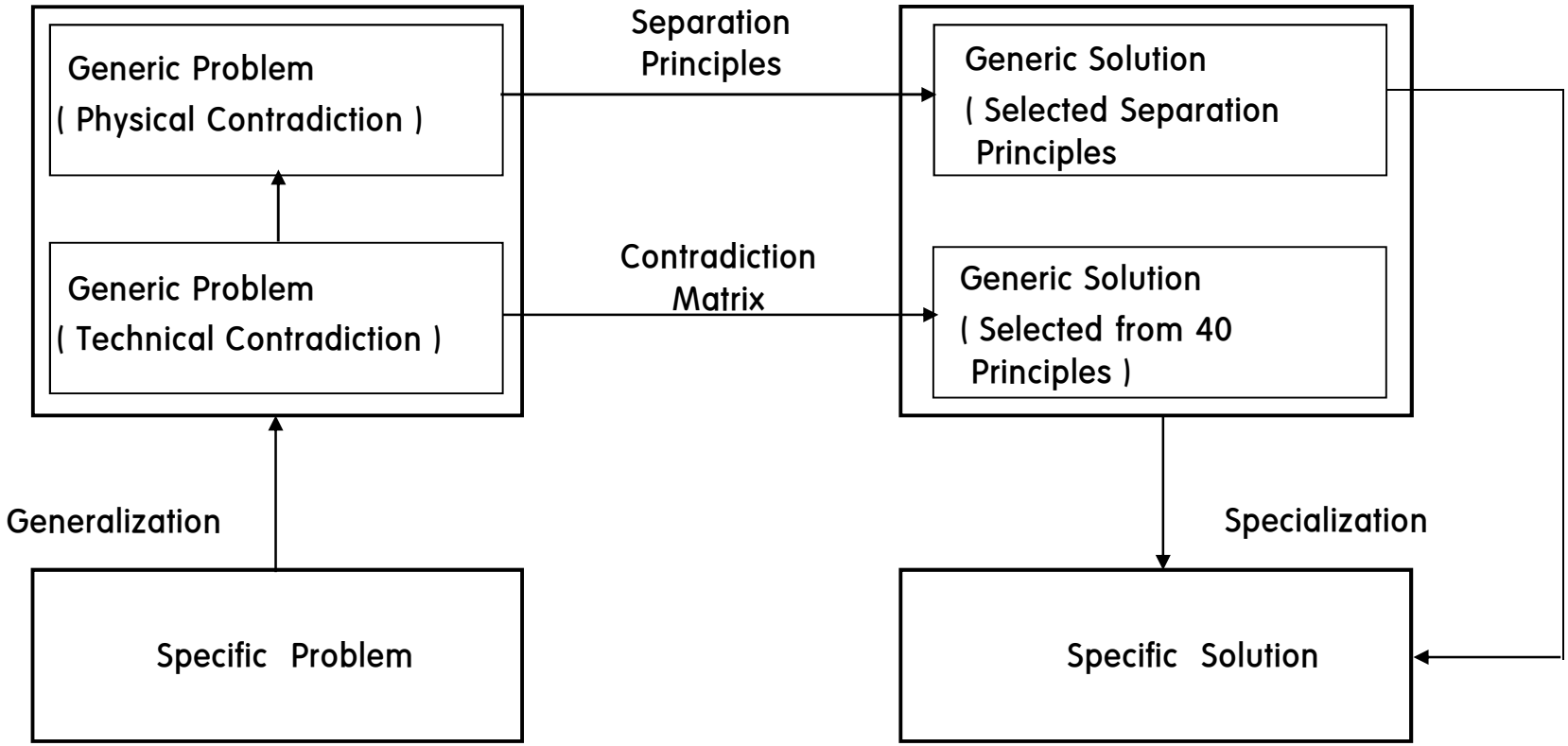

Fig 2.1.2 The first and second levels of abstraction for problem solution

2.1 TRIZ solution framework

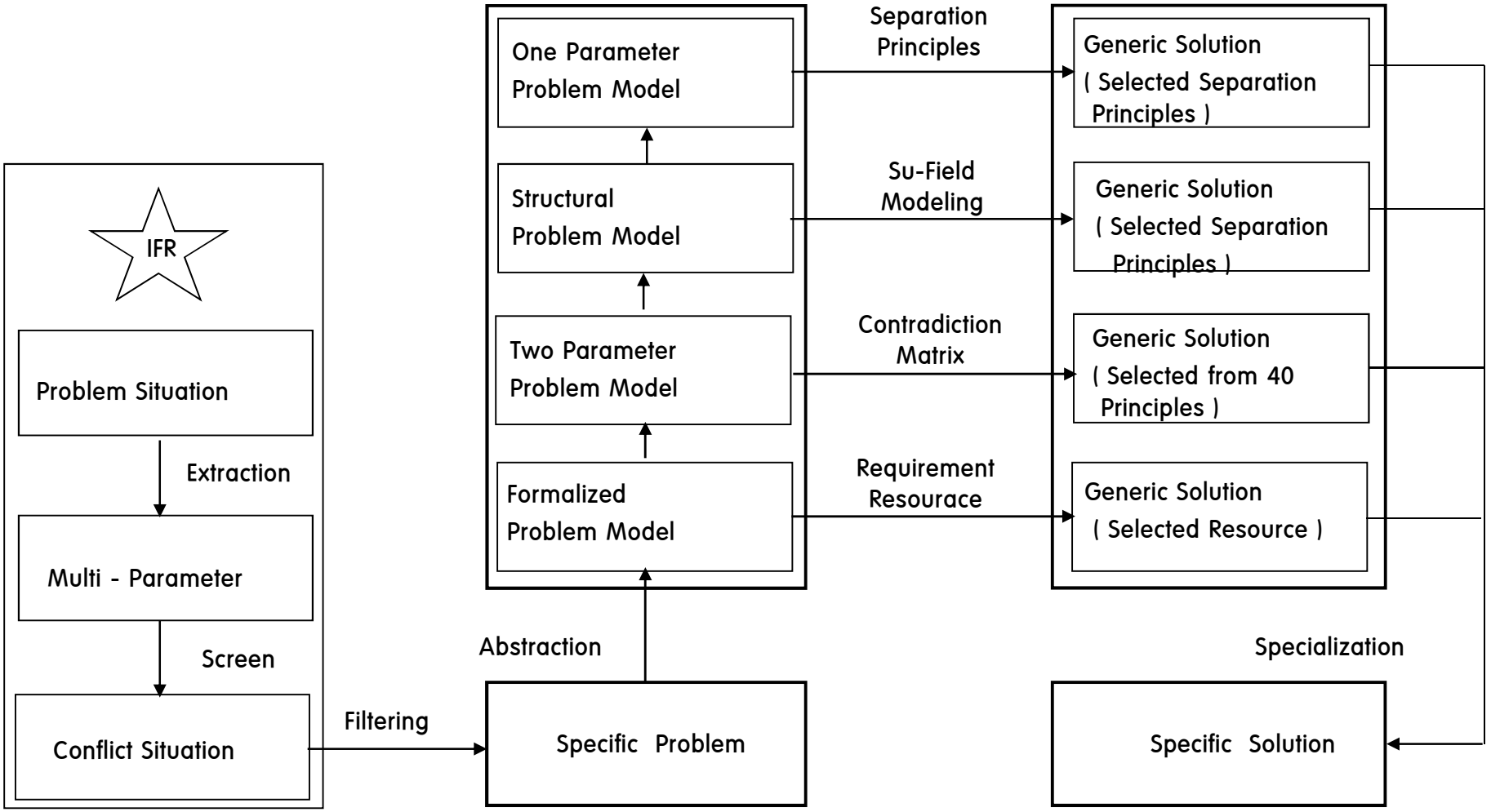

Fig 2.1.3 The more detail model : The Algorithm of Improving Problem Situations AIPS-2012

2.2 FLC solution framework

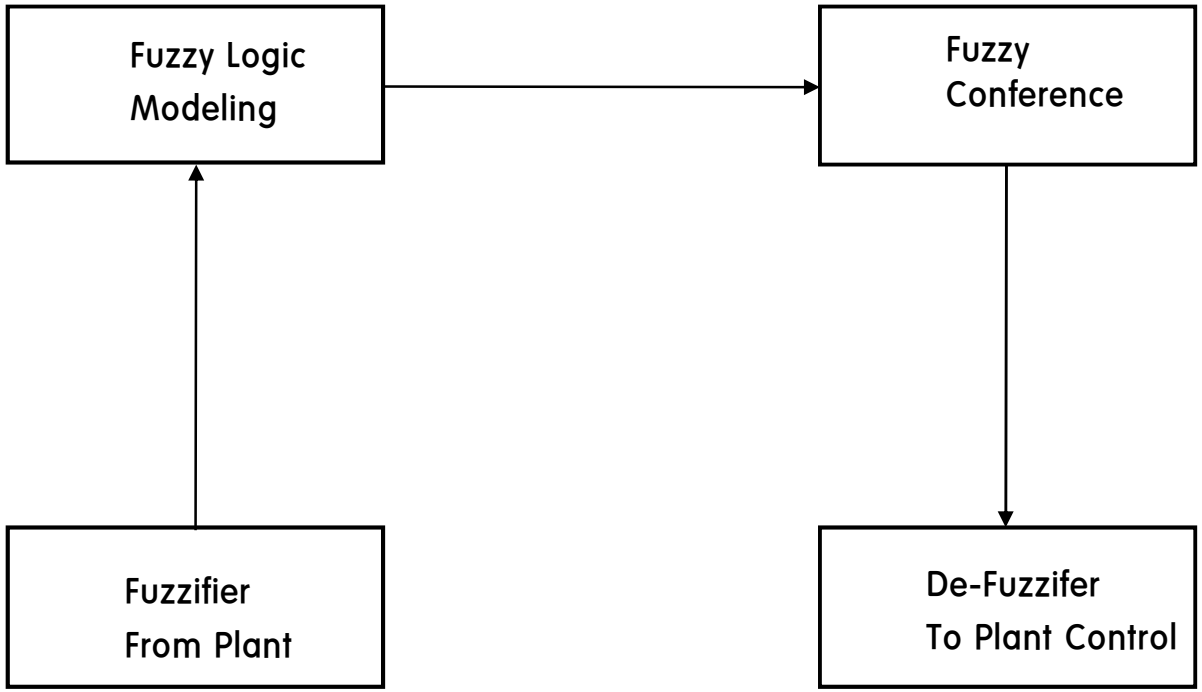

Figure 2.2.1 Classical Fuzzy Problem Solving Framework

2.2 FLC solution framework

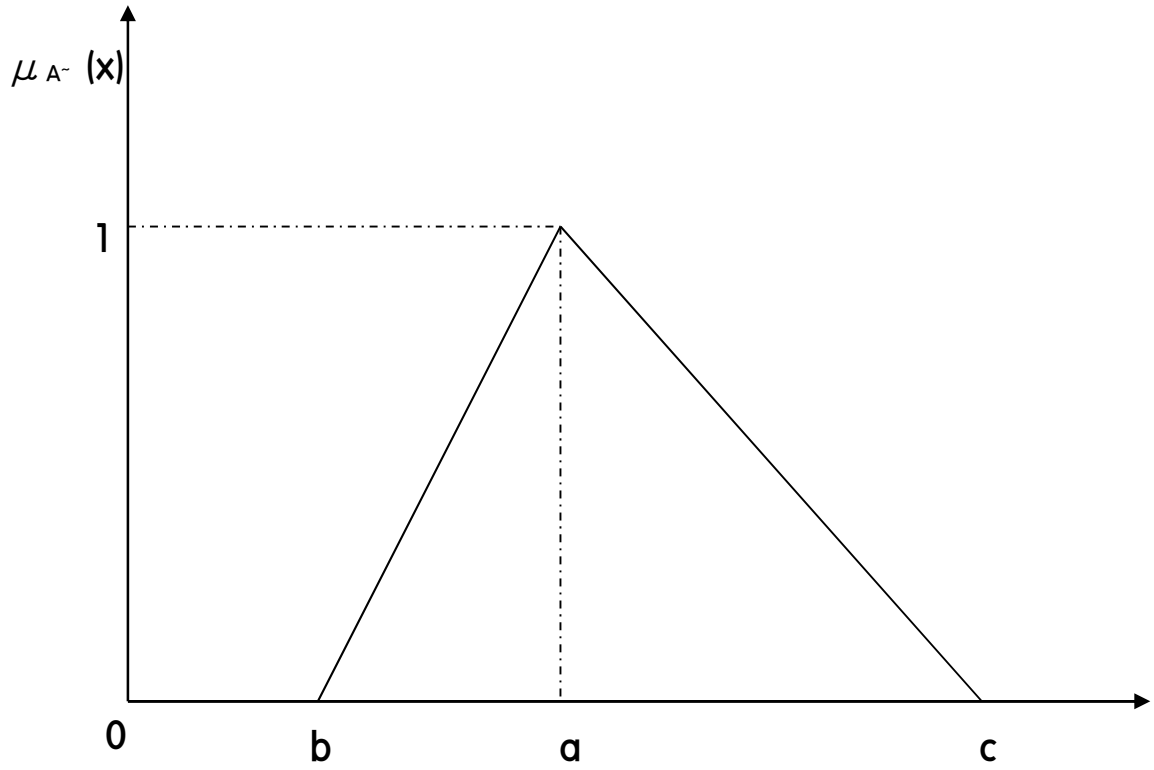

Fig 2.2.2 Membership function of a triangler fuzzy number $A^{\sim}=(a,b,c)$

2.2 FLC solution framework

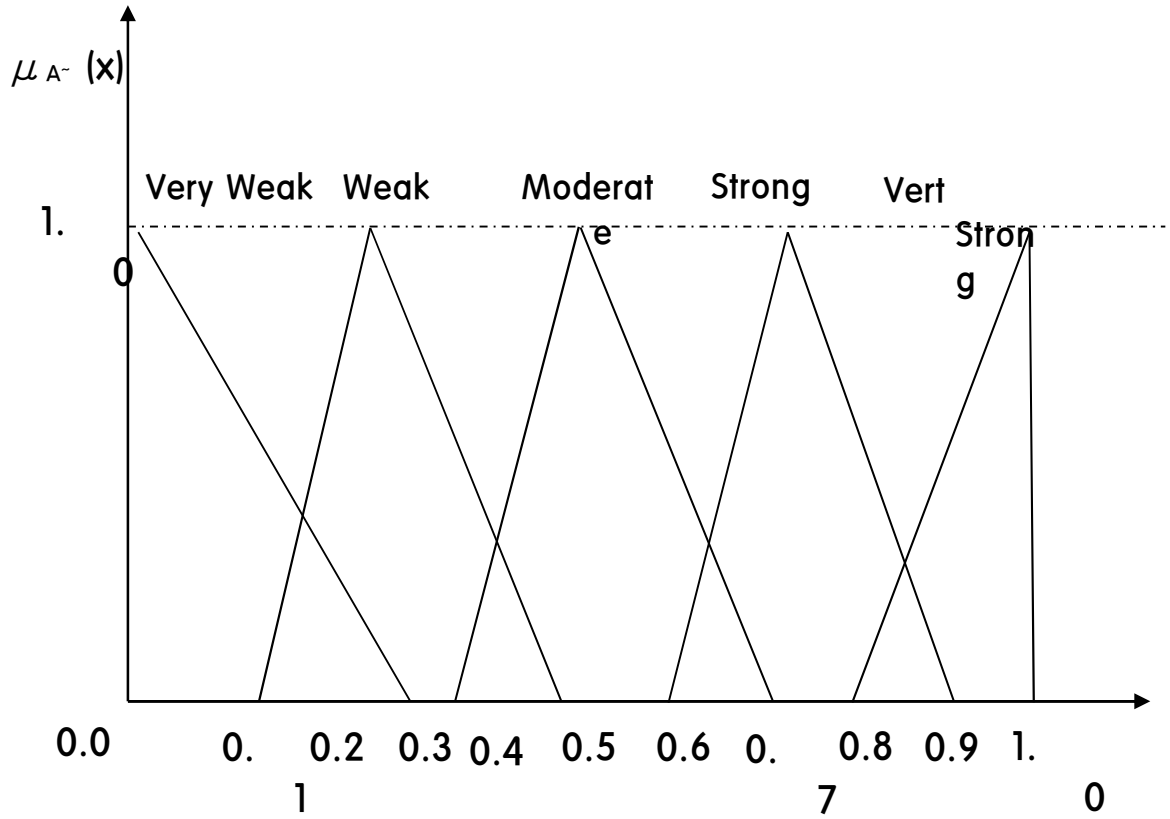

Fig 2.2.3 Membership function of relationships between PCs and TCs

2.2 FLC solution framework

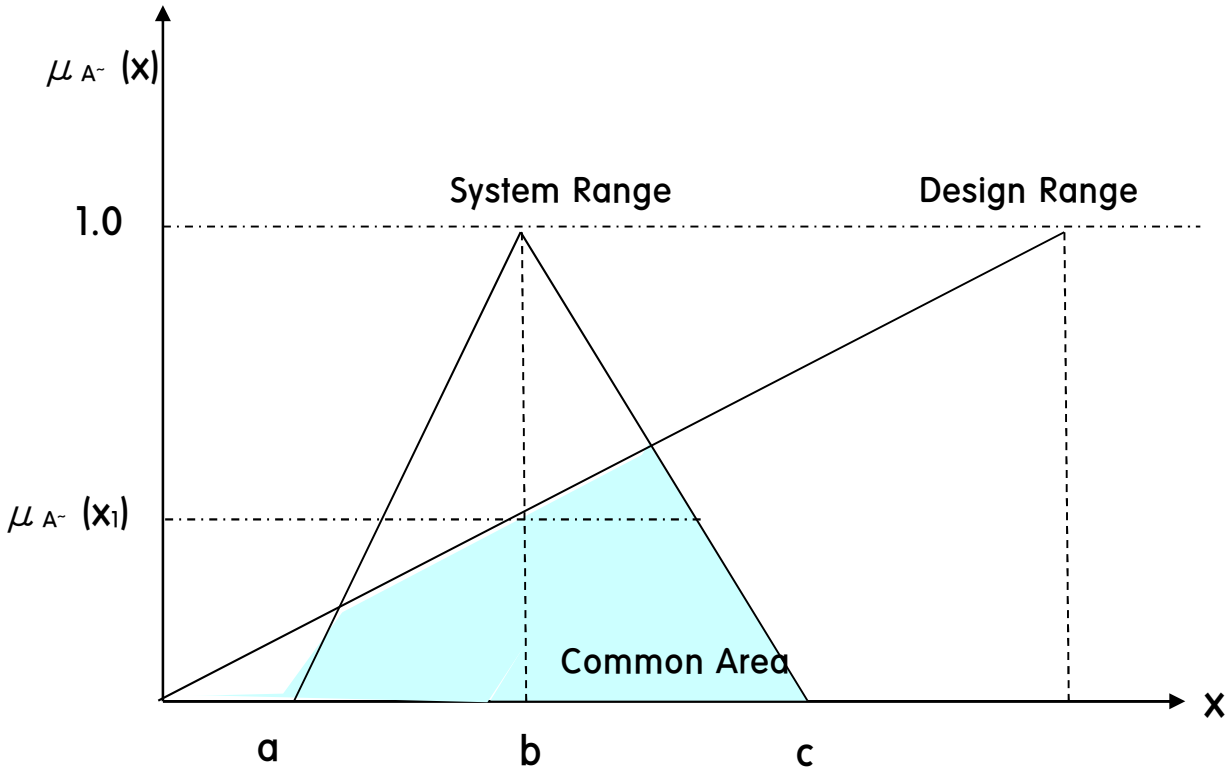

Fig 2.2.4 System rage, design range, of relationships between PCs and TCs

2.3 TRIZ & FLC model

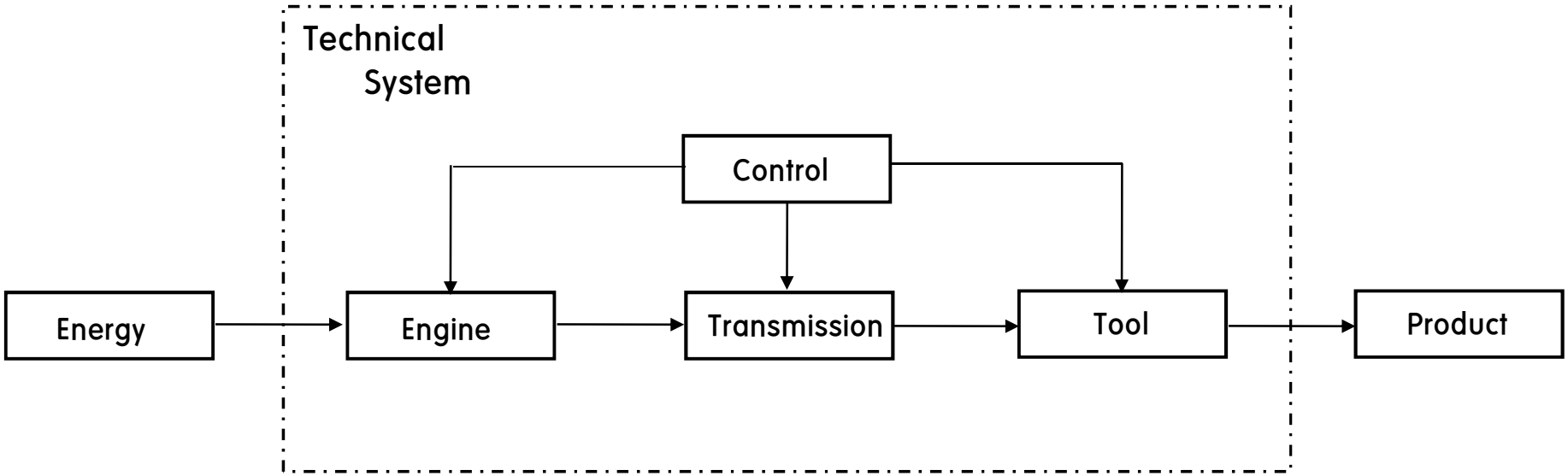

Fig 2.3.1 The general model for Technical System in TRIZ

2.3 TRIZ & FLC model

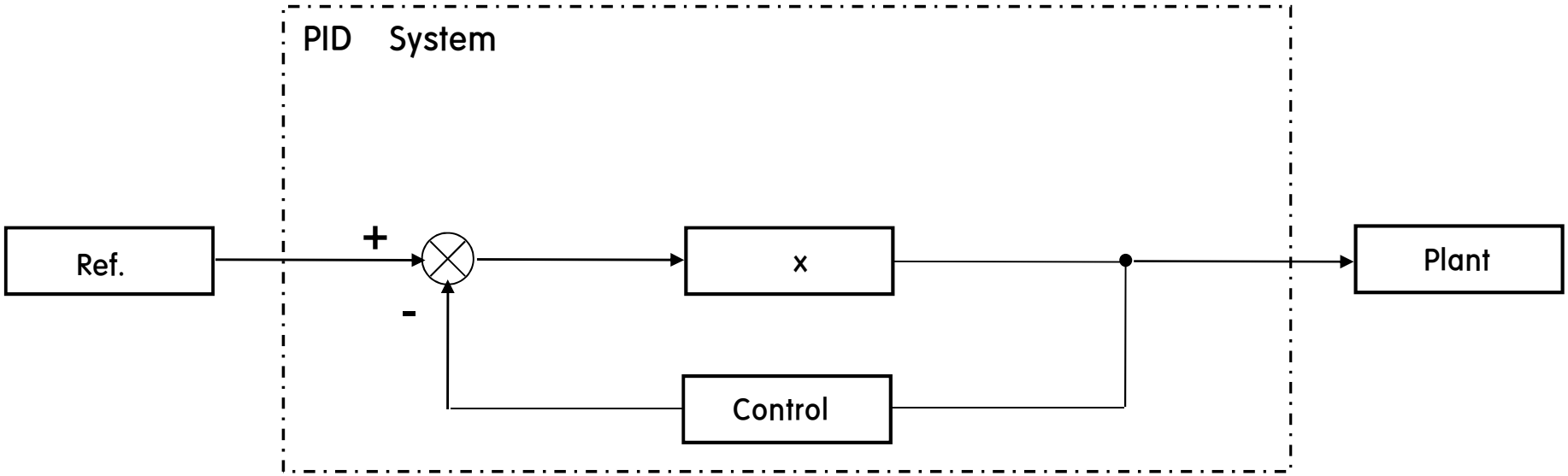

Fig 2.3.2 The general model for PID Feedback Control System

2.3 TRIZ & FLC model

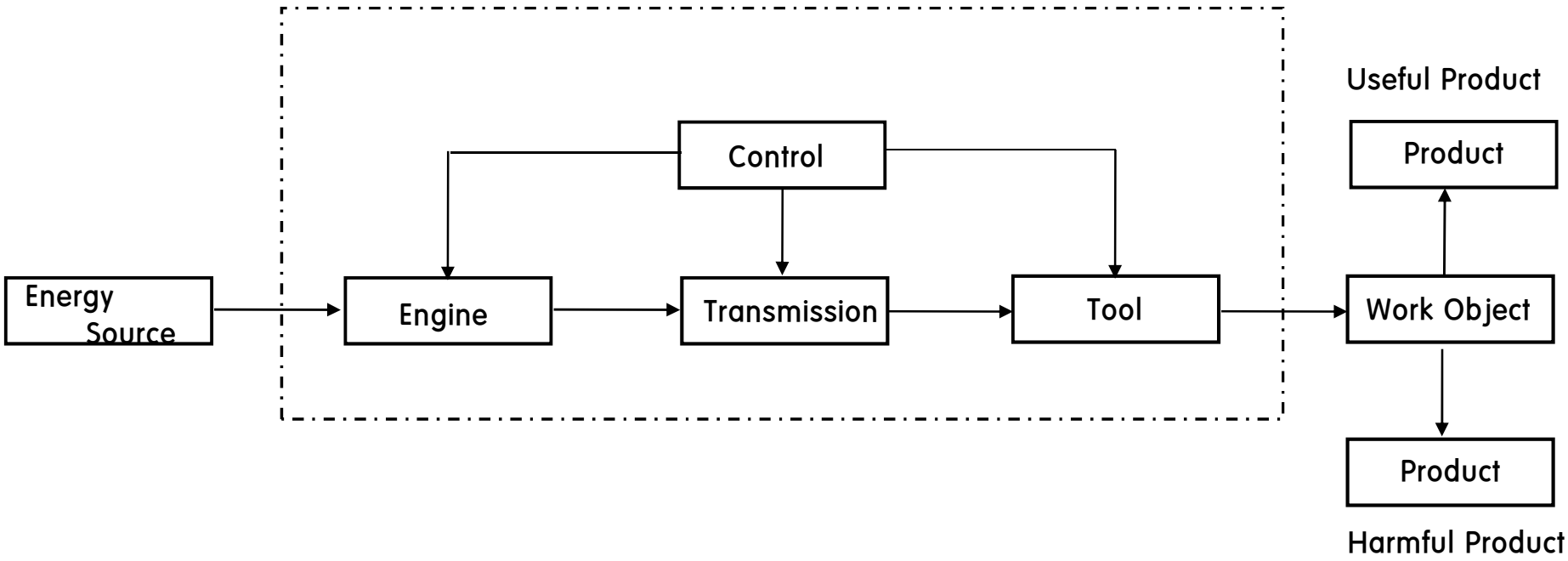

Fig 2.3.3 The general model for Technical System in TRIZ

2.3 TRIZ & FLC model

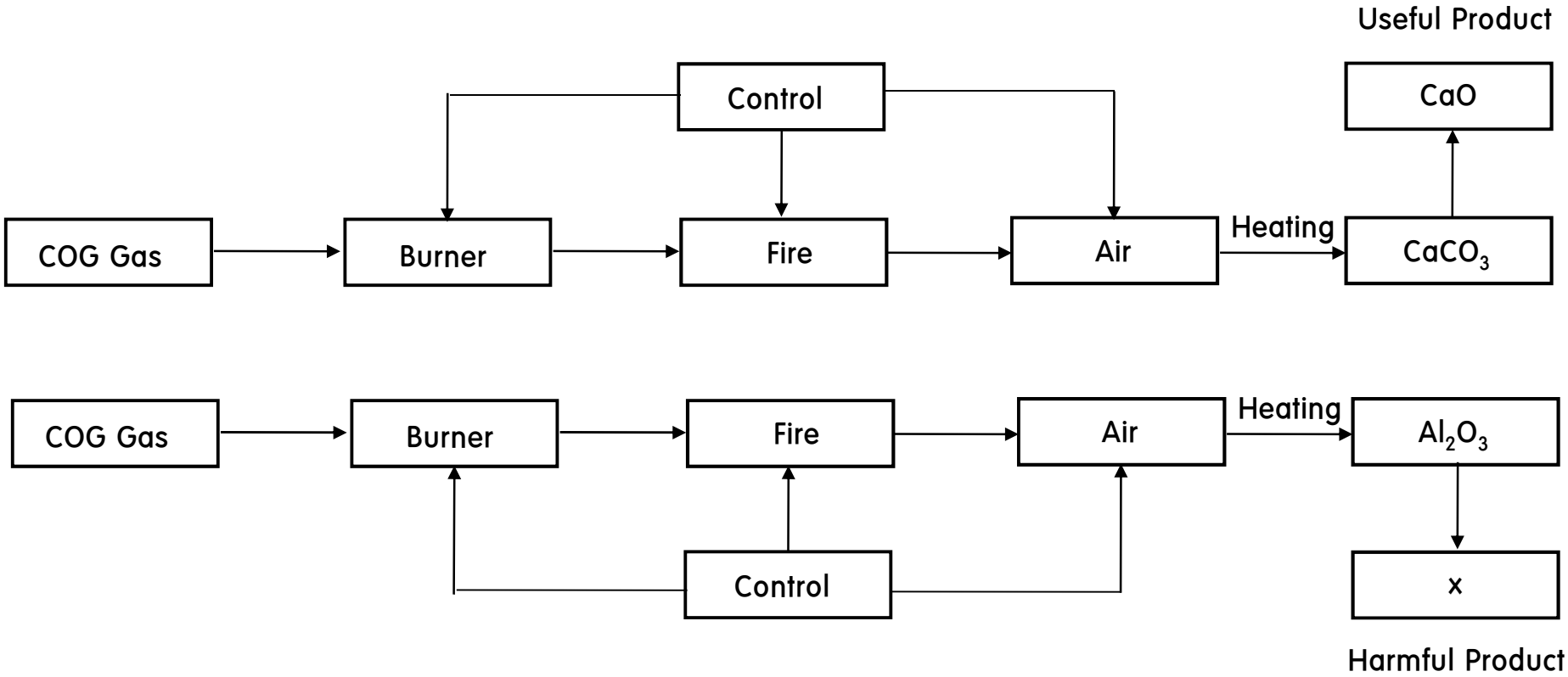

Fig 2.3.4 The example model for Technical System in Roltry Kiln

2.4 PQ matrix

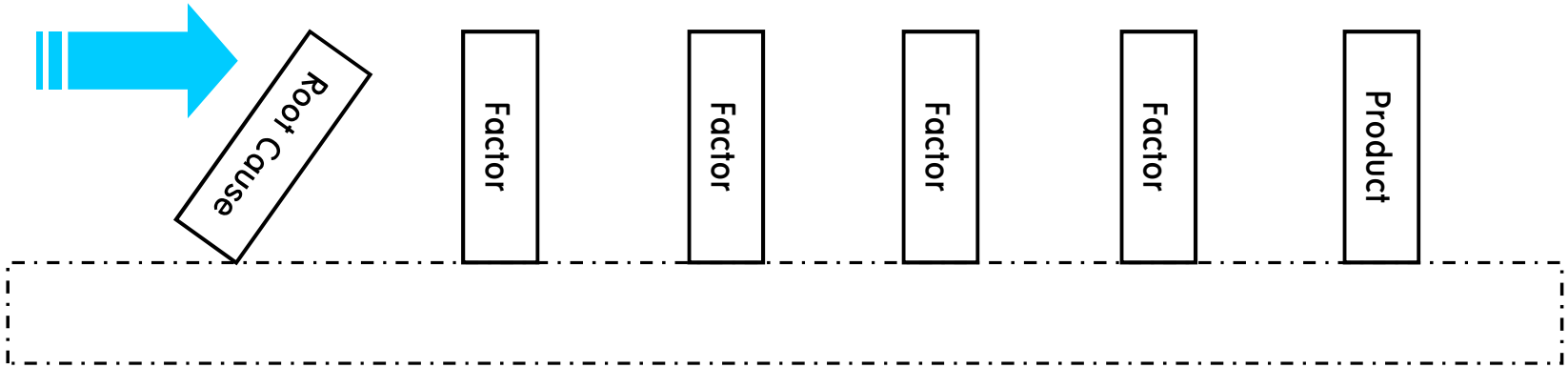

Fig 2,4,1 Domino Relation in Problem Event

2.4 PQ matrix

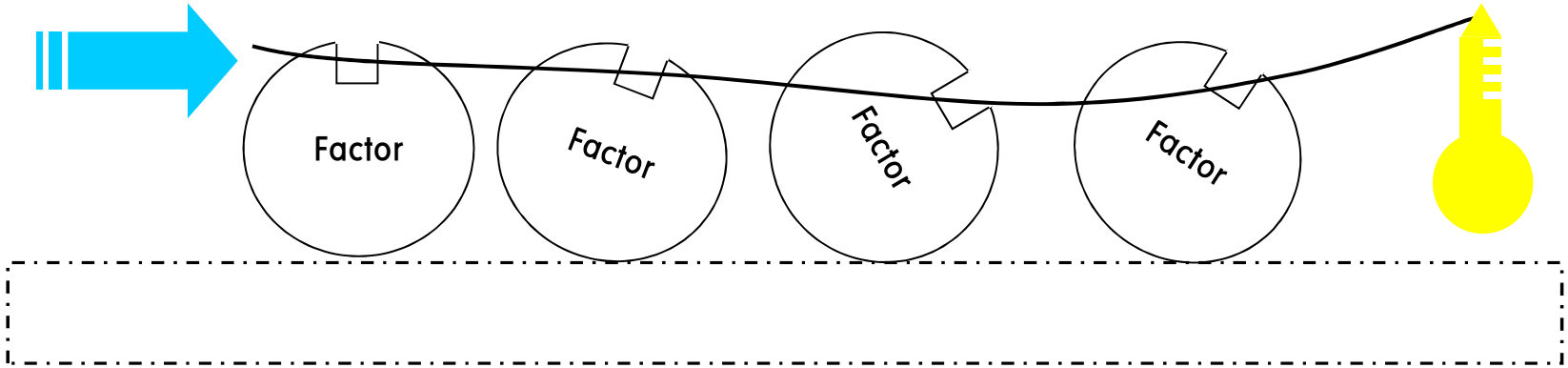

Fig 2.4.2 Spinning to Find Problem Solution

2.4 PQ matrix

P \ Q	Q1	Q2	Q3	Q4	Q5	SUM
P1	+1	+1	−1	x	+1	
P2		X				
P3		−1				
P4						
P5						
P6						
P7						
P8						
P9						
P10						
SUM						

Fig 2.4.3 The PQ Matrix Table

3. Results and Discussion

Comparing the problem solving framework

showed a similarity as methodology between TRIZ and FLC .

The similarity in problem-solving is

because of human being at the core of the problem solving.

Using analogy between TRIZ and FLC

a useful tool is Derived : PQ matrix.