

## Abstract Template (Form B) for The Third TRIZ Symposium in Japan, 2007

Larry Ball (Honeywell)

### Abstract

This paper highlights some of the main topics covered in the book "Hierarchal TRIZ Algorithms". It discusses the genesis of the tool groupings and their order of use. An alternative to ARIZ is presented which employs extensive causal analysis. As an aid to this method, five more Separation Principles are discussed along with sub-principles and an algorithm for more directed use. Finally, a general invitation to participate in a collaborate book is presented.

### Extended Abstract

1. A rational for modifying classical innovation theory is presented along with a method for accomplishing it. This method involves decomposing traditional innovation tools and then reordering them into groups that solve like problems. A sequencing of these tool groups is referred to as a Hierarchy of Thinking which dictates that we must know or take certain things for granted in order to solve problems. We generally follow this hierarchy rather we like it or not and usually without knowing it. This gives a pattern which allows us to identify gaps, exceptions and new tools for improvement of innovation theory.
2. An alternative process to ARIZ is shown which involves an extensive method of Causal Analysis. This form of analysis illuminates the attributes of the objects, fields and functions which lead to the problem. It also illuminates the contradictions, alternative problems and the problem functions.
3. Following causal analysis, problematic functions may be idealized and/or the contradictions resolved. This overall method provides the same general results of ARIZ but in a more natural manner.
4. Several classes of contradictions are presented. It is noted that there is a certain reluctance of people to attempt some of these classes, which limits the solutions.
5. A discussion on Technical versus Physical Contradictions and why the discovery of the Technical Contradiction usually follows the discovery of the Physical Contradiction rather than the reverse. This mistake has held back the development of ARIZ, but is naturally bypassed in the foregoing Causal Analysis.
6. Five more Separation Principles are presented. A rational is given for why they are not sub-principles to Time, Space and Separation between the Parts and the Whole. Sub-principles are presented for each of the eight Separation Principles along with an algorithm to know when each principle or sub-principle might be employed.
7. Finally, an invitation is made in the continuing preparation and publishing of a collaborative book which continues to catalogue tools of innovation and present examples and sub-algorithms for use of these tools.

### Presenter's Profile: Larry Ball

Larry's current position at Honeywell is primarily TRIZ education and deployment. He was Educated at Brigham Young University (1980). He started work in the magnetic tape recording industry and then left to go to the aerospace industry and work in the areas of valve performance and control. He was introduced to TRIZ in 1992 and has since engaged in an earnest application in the development of new products with the application of TRIZ. Invention is his primary hobby. He has 15 aerospace patents and has written two books and begun a third collaborative book: Breakthrough Inventing with TRIZ, Hierarchal TRIZ Algorithms, and Hierarchal Invention Algorithms. [Lball7@cox.net](mailto:Lball7@cox.net)