Book Review: The 121 heuristics for problem solving.

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Guide for inventors, Volume V, The 121 heuristics for problem solving by

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Iasi, Romania. Performantica, 2003. 284 p; 24 cm. US$50. Available as an e-book from www.trizexperts.net or in hardback from the publisher.

Regular readers of the TRIZ Journal will remember the articles in the September 2000 and July 2001 issues by the authors of the new book, ***The 121 heuristics for problem solving.*** Wei, Savransky, and deCarvalho have undertaken, in their own words, "to augment TRIZ knowledge base via the input of new Heuristics validated in the international patent database" with particular emphasis on heuristics developed in the former USSR by Professor Alexander Ivanovich Polovinkin. The focus of this book is the validation of Polovinkin's heuristics, and an extensive database (pages 54-284) of patents presented as examples.

There is some minor awkwardness in the English of ***The 121 heuristics for problem solving,*** as might be expected in a Brazilian/Taiwanese/Russian-American collaboration, but nothing that would impede understanding of the subject. Those of us who are limited to English only for our study of TRIZ can be grateful for the access that book gives us to work by Polovinkin and by Altshuller and others that has never been published in English.

In the introduction, the authors give details of how they have reduced the Polovinkin heuristics by eliminating those that were specific to certain Soviet design requirements, and those that were specific to detailed design, in order to have a set that parallels the TRIZ approach to conceptual design. Polovinkin's work was based on USSR patents. In this book, the authors have set out to present

> *… major goals of our research are:*
> - *To verify our assumption that the selected Heuristics are valid worldwide;*
> - *To test our hypothesis that selected Heuristics are culture-independent, and;*
> - *To verify our assumption that Polovinkin´s Heuristics can enlarge the knowledgebase of TRIZ by comparing them with the Inventive Principles.*

To ease the burden of learning 121 Heuristics, the authors have presented them in 8 categories, with guidance for readers about how to select the relevant category and heuristic for each problem. The examples are presented as one paragraph, with the relevant information relating the patent to the heuristic that it is illustrating. For readers who don't want to have a search engine open throughout their reading of the book, illustrations would be extremely helpful (particularly simplified illustrations or photos, rather that the patent drawings.) We recognize that this would have expanded the book considerably, but urge the authors to consider it for future editions.

The method used for the patent search is presented in detail, but readers who are interested in the results can skip this chapter with no loss of understanding. Although at initial reading many of the 121 appear to relate primarily to mechanical engineering, the detailed analysis showed that the typical heuristic had examples from 4 fields, with a high of 8 different fields.

Fewer that one third of the 121 relate directly to the TRIZ 40 Inventive Principles, and a few relate to more general TRIZ elements, such as the concept of ideality or the patterns of evolution. The balance will give significant new insights.

The analysis and the examples in ***The 121 heuristics for problem solving*** will be of great interest to anyone who wants to expand TRIZ using and to expand his/her problem solving knowledge base.