Systems Science

Addressing Global Issues

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Edited by

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PREFACE

As we approach the end of the 20th century we can look back upon the achievements that have been made in a variety of human endeavours with pride. Enormous strides have been made to improve the quality of life of millions of people through the application of the scientific discoveries made during this and past centuries. The 20th century will be remembered as much for the mass exploitation of scientific discovery as for the discoveries themselves.

The technological age has meant that the human being is able to contemplate activities which "defy" nature. For example, some of the work involved in the preparation of these proceedings has been done whilst travelling at over 500 miles per hour seven miles above the surface of the earth. It is not difficult to conjecture about the effect that this relatively recent technology has had upon a number of "systems". Air transportation has provided a number of benefits including such disparate examples such as enabling holidays, famine relief and the cross fertilisation of cultural practices from other lands. Equally, there have been undesirable effects such as enabling the means of mass destruction, interference in other cultures and the speedy transportation of disease. Moreover, the physical presence of the aeroplane itself represents the consumption of fossil fuels, a source of pollution and a change in the way think about life.

The view expressed here is of course the view of an inhabitant of the "western world". The changes to the way in which the entire inhabitants of the planet live are impossible for one person to express. Many of our neighbours may have different views about the changes that the technological age has brought upon their lives. It is not difficult to imagine the fear and lack of control that some feel as technological progress alters their lives and, in some cases, as the output of technology pollutes their environment.

The need to be aware of the implications of our actions has never been greater than it is now. No time is more appropriate for us to review the way in which we introduce change and weigh carefully the implications of our actions upon the wider system. Technology has provided us with the means of assessing the effects of our actions before we take them and our awareness of the mistakes of the past should provide the motivation to ensure that we do.

Most of us are concerned with day-to-day problems which need to be solved in order to make some progress in our particular area of interest. It is "Global" in this sense that is the inspiration behind the theme for the 3rd UKSS international conference. The conference has provided the opportunity for Systems Scientists from many nations to debate the contribution that Systems Science is making to specific areas of human endeavours and to consider what further contributions might be made.

This text contains papers which are concerned with issues of a truly global nature but, equally important, it contains a larger number of papers in which Systems Thinking has been used to assist in problems which are more commonplace and within the competence of an individual to control. There are papers within this publication which deal with practical problems which serve as examples for those concerned with problems which need to be addressed here-and-now. It is such commonplace problems that makes the issues discussed

within this text truly global - in the sense that many of us have or are experiencing similar difficulties. The book contains examples of the application of Systems Science to a variety of problem domains and the way in which the kind of thinking that this epistemology demands has shaped the outcome. The reader must judge to what extent those outcomes represent an improvement over alternative approaches and the value to them.

The division of the papers within this text reflects the way that the streams were organised for the conference as much as an attempt to classify papers into topic areas. Not surprisingly there is overlap to be found between topics. Systems Science is dedicated to the notion of holism and should not be considered a specialist branch of intellectual pursuit but a kind of thinking which may be appropriate to all domains of knowledge.

Some readers may find that they will classify the papers into "Hard" and "Soft" systems thinking. It is a classification which may provide intellectual satisfaction for some but is considered of limited value within the context of the purpose of this text. The conference was devoted to an exposition of the practice of Systems thinking and to raising the awareness of practitioners about diverse problems in which the thinking is used. Any debate about "Hard" or "Soft" systems thinking seems subordinate to that purpose.

On the whole the view taken in this preface is an optimistic one which expresses a naive belief that, notwithstanding the problems which we are now experiencing, there will be a solution found for them. The support shown for the conference and the papers printed within this volume will, it is hoped, make a small contribution to the continued use of systems ideas in addressing problems of all kinds.

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