## Biographical Note



Alan Sturt was educated in classics, English literature and modern languages at school. He went on to St. John's College, Cambridge with a State Scholarship in Classics, switched disciplines to Natural Sciences and received his BA in 1959.

His career has spanned industrial research, management, organisation and business and economic policy analysis.

Not surprisingly he favours a multidisciplinary approach to problem-solving. He finds it more fruitful than other, narrowly focussed approaches both for the purposes of analysis and in the action which follows.

His interests include political, economic and social history from the earliest times to the present, archaeology, music, reading, hill-walking and sailing.



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## A Degree of Freedom

Systems are everywhere: social systems, business systems, central heating systems, management systems, the solar system, the nervous system, the economic system, the financial system and so on,

Even when we do not use the word itself we still talk in terms which imply systems: the family, football teams, organisations, trees, office blocks, flocks of birds or animals etc. In fact it applies to everything dynamic. Everything which is not a list is a system.

There we stop short. We do not apply the rules of systems in our search for solutions. Yet there is a wealth of insight to be gained by doing so. We can save much expense and embarrassment by applying the rules before we set up our systems. After the event we can see where we went wrong.

This book is a simple, non-mathematical exposition of systems thinking from first principles. Diagrams are used to explain the concepts. Many examples including some of those mentioned above demonstrate their use.

Systems thinking is an invaluable tool for managers, organisers, even politicians, as well as scientists and engineers who look beyond their immediate disciplines.

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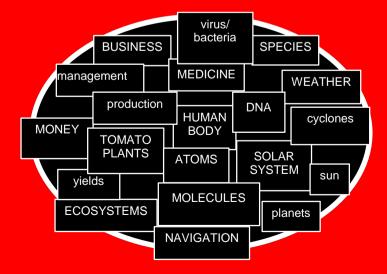
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We use the rules of arithmetic to count and measure without realising that such rules apply to very little else, and can be misleading if extended to other areas.

We cannot 'add' living things, for instance, or organisations such as football teams or companies, because their parts interact; they are systems. If we try to add to them, we form an entirely new system. If we subtract from them, we destroy their entity. The result is something different.

Systems thinking is a way of looking at the world as it really is, not frozen into numerical abstraction. It focusses on the changes of a system over time, its most important feature, its dynamics.

The rules are simple and need no equations. The most important rule is that a system is more than the sum of its parts.

Laying out a system in diagrammatic form defines its boundaries and goals, reveals its dynamics and provides a framework for analysis and problem-solving. The book illustrates the principles with a wide range of examples as different as tomato growing and the weather, touching even on language, planning, strategy and philosophy.

The principles apply to any system the reader chooses. Everyone involved in change should use them, preferably before resources are committed. Analysis is quick and cheap, but an unworkable system is irretrievable.

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