TOTAL SYSTEMS INTERVENTION

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Contents

Summary

This article describes the development of Total Systems Intervention (TSI) since its inception in 1991. Two main versions of TSI are described; these are referred to as TSI 1, the original version presented by Flood and Jackson, and Local Systemic Intervention (LSI, or TSI 2), the later version developed by Flood. Following a brief introduction in the first section, the second section of the article concentrates on TSI 1. First, the theoretical underpinnings of TSI 1 are discussed, and links to Critical Systems Thinking (CST) are made. This is followed by a description of the TSI 1 process, detailing the creativity, choice, and implementation phases, with particular attention being paid to the nature of the "system of systems" methodologies as a guide to methodological choice. The third section considers LSI, beginning with an exploration of the differences between TSI 1 and LSI. The underpinning principles of LSI are then presented, followed by a description of the process. In the fourth section, to illustrate the points made in previous sections, an example application of TSI 1 is presented: an intervention resulting in the derivation of an improved Information Systems User Support Service in a university. In this intervention, TSI 1 was used to orchestrate the use of the ETHICS (Effective Technical and Human Implementation of Computer-Based Systems); and

QUICKethics (Quality Information from Considered Knowledge) methodologies were used to yield a new system design. The final section offers a brief critique of TSI/LSI, and reports the need for further research on identifying and disseminating the practical benefits of CST/TSI.

1. Introduction

Total Systems Intervention (TSI) was originally introduced in 1991 by Flood and Jackson as a methodology intended to enable practicing managers to operationalize the philosophy and principles of Critical Systems Thinking (CST). The CST movement is based on five commitments: critical awareness, social awareness, complementarism at the theoretical level, complementarism at the methodological level, and a commitment to human well-being and emancipation. These philosophies should be embodied by those who lay claim to CST in their problem-solving activities; however, putting such a complex set of commitments into practice is clearly no simple task. Hence TSI was developed as a set of methodological guidelines to support this endeavor. The early version of TSI was developed further by Flood, who claimed to have submitted the idea to "Postmodern Critique". The most recently developed version of TSI is referred to as Local Systemic Intervention (LSI).

2. Total Systems Intervention (TSI 1)

2.1 Principles

The original version of TSI, TSI 1, consists of three phases: creativity, choice and implementation. Managers in complex situations are first encouraged to think creatively about problem situations and their potential solutions; secondly guidance is provided concerning the selection of an appropriate systems methodology (or methodologies) for a particular problem situation; thirdly, the methodologies are implemented in an appropriate manner. These stages are discussed more fully in the next section.

It is important to note, however, that although TSI 1 is designed to put the tenets of CST into practice, it is not just a "recipe" or a "cookbook". Further to its underlying CST philosophy, TSI 1 has its own theoretical basis which draws heavily on—and develops—Morgan's work, in which metaphors are used extensively as a means of gaining insight into complex organizational situations. It also relies on a framework known as the System of Systems Methodologies (SOSM) to aid methodological choice. The means by which these two theoretical schemata fit within the process of TSI 1 are described below.

By combining the three elements above with the five commitments of CST, and the use of metaphor and the SOSM, it is possible to derive seven theoretical principles which are embedded within the three phases of TSI 1. These are:

1. Organizations are too complicated to understand using one management model, and their problems are too complex to tackle with quick fixes.
2. Organizations, their strategies, and their problems should be investigated using metaphorical analysis.

3. Metaphors that seem appropriate for highlighting organizational strategies and problems can be linked to appropriate systems-based methodologies to guide an intervention.
4. Different metaphors and methodologies can be used in a complementary way to address different aspects of organizations and their problems.
5. It is possible to appreciate the strengths and weaknesses of different systems methodologies and to relate each to certain organizational concerns and problems.
6. TSI sets out a systemic cycle of inquiry with interaction back and forth between the three phases.
7. Facilitators and clients are both engaged at all stages of the TSI process.

(See *Integrative Systems Methodology*.)

2.2 Process

The three phases of TSI 1: creativity, choice and implementation are now considered in turn.

2.2.1 Creativity

The creativity phase is designed to enable managers and other stakeholders in organizational situations to think creatively about improving their enterprises, particularly in problem situations and other areas of concern. In TSI 1, specific reference is made to a set of metaphors for organization popularized by Morgan. These are: machine, organism, brain, coalition, culture, and prison.

Thus, participants in problem situations are asked to effect comparisons of aspects of their current organizational situation, such as its structure, strategy, control, and information systems with the metaphors in question. Further, they may consider how alternative metaphors from the set may better capture what can potentially be achieved with the organization.

The power of the metaphorical approach lies in the ability to develop powerful insights into structure and function, as well as social and political aspects of an organization. Metaphor can encourage seeing the world anew, particularly where there are areas of rigidity and defensive attitudes to overcome.

During the creativity phase, it may be that a dominant metaphor surfaces, which may impact strongly on methodological choice. A range of other dependent metaphors may also surface, which may also be usefully pursued into the next phase.

2.2.2 Choice

The choice phase makes use of the SOSM, a grid developed around the nature of problem situations, together with the assumptions underlying a range of problem-solving methodologies. Use of the SOSM is based on the supposition that all methodologies have different strengths and weaknesses and that no one methodology

can be applicable and effective in all situations. The SOSM was developed to enable managers to choose an appropriate methodology with which to address a particular problem situation.

The first axis of the grid is used to map the perceived nature of the relationship between the participants in a problem situation. If there is genuine agreement amongst participants as to what a problem is, how it is to be solved, and what acceptable outcomes are possible, then this is a *unitary* situation. If there are different possibilities, interests, and objectives, yet it seems likely that compromise or consensus can be reached, then the situation is *pluralist*. If there is fundamental conflict, with no possibility of compromise, and an outcome can only be reached by exercise of power, then such a situation is said to be *coercive*.

The second axis of the grid distinguishes between *simple* or mechanical problems, and *complex* problems—which are usually subject to human interactions and influences, and may therefore be more difficult to address. So six ideal type problem contexts can be identified (Table 1)

		PARTICIPANTS		
		UNITARY	**PLURALIST**	**COERCIVE**
P R O B	SIMPLE	Simple—Unitary	Simple—Pluralist	Simple—Coercive
L E M S	COMPLEX	Complex—Unitary	Complex—Pluralist	Complex—Coercive

Table 1. Ideal type problem contexts (adapted from Jackson, 1991, p.29).

This grid of problem contexts is useful as an aid to structuring thinking. It should not, however, be seen as a map or a model of the real organizational world.

The SOSM is then obtained by considering the assumptions underlying a range of systems methodologies through ascertaining what each assumes about the problem situation it is dealing with. For example, "hard" systems thinking (such as classical operational research, or systems engineering) takes it for granted that it is unproblematic to establish clear objectives for a system designed for organizational improvement; and that the system can then be developed as a quantitative mathematical model which simulates performance under different conditions. This is a mechanical, unitary view of the organizational aspect under consideration. On the other hand, "soft" systems approaches (such as Soft Systems Methodology) are designed to explore and reveal different worldviews amongst participants, whilst looking towards consensus: a clearly pluralistic stance which may be applied to either simple or complex problems.

So systems methodologies may be mapped to problem contexts to maximize the chances of potential success, as in Table 2:

	PARTICIPANTS

		UNITARY	PLURALIST	COERCIVE
P R O B L E M S	SIMPLE	Simple—Unitary Hard Systems Thinking (machine)	Simple—Pluralist Soft Systems Thinking (culture/machine)	Simple—Coercive Emancipatory Systems Thinking (culture/coercive)
	COMPLEX	Complex—Unitary Organizational Cybernetics (organism/brain)	Complex—Pluralist Soft Systems Thinking (culture/organism)	Complex—Coercive Emancipatory Systems Thinking (culture/coercive)

Table 2. System of systems methodologies (adapted from Jackson, 1991, p.29).

It is also possible to relate the underlying assumptions of problem-solving methodologies to metaphors; these too are indicated on the SOSM. For example, it is obvious that the brain metaphor was central to early understandings of cybernetics; whereas hard systems thinking views the world as machine-like in character; soft systems thinking views organizations through a cultural lens. Through this metaphorical linkage it is possible to relate the outcomes of the creativity phase with the SOSM. Thus, an appropriate methodology (or methodologies) to apply to a problem situation can be chosen. The most likely outcome is that the dominant metaphor will lead to the selection of one methodology, whilst dependent metaphors may lead to the selection of other methodologies to be used at different times within the intervention.

Thus, TSI 1 is a *meta-methodology*—it claims to "sit above" and guide the use of other methodologies during an intervention. However, whilst choice of methodology should be informed by the SOSM, it should not be determined by it.

2.2.3 Implementation

The outcome of this phase is a set of change proposals. The task of the implementation phase is to set out plans to orchestrate the application of the chosen methodologies in accordance with agreed objectives. Any given methodology may be considered to be dominant or dependent at any given time during an intervention: TSI is a cyclical mode of inquiry, and it is to be expected that there will be movement back and forth amongst the three phases, and between methodologies, as the intervention progresses. Once again, TSI is not to be seen as a recipe: the facilitator of the intervention needs to continually reflect critically on the progress of the intervention and adjust the choice or order of implementation of the methodologies as appropriate at any given time.

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Biographical Sketch

Dr Lorraine Warren Senior Lecturer in the Department of Corporate Strategy at the Lincoln School of Management. Lorraine originally graduated as a Chemist with First Class Honours from the University of Wales in 1980, staying on to obtain her PhD in synthetic organic chemistry in 1983. She then spent two years as a Research Associate at the State University of New York at Binghamton, working on practical aspects of pharmaceutical manufacture. Since then, she has had extensive experience in the private sector and in Higher Education. On returning to the UK in 1985, Lorraine established her own company, an educational and training services agency, which continued successfully until 1990. At this time, the pull of academic life proved too strong, and she spent a year at the University of Bradford completing an MSc in Computing in 1991, and carrying out research into multimedia education materials. She then joined the University of Hull for two years as a Project Manager, researching the development and dissemination of multimedia materials in Higher Education. In 1995, she began her present employment at the University of Lincolnshire and Humberside.