Systems in the World at Large: A Critical Reflection

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Abstract

Many of us in the ANZSYS community believe that we are thinkers, theorists and that we practice what we research in the community, in industry or for the environment. A review of papers published in the ANZSYS07 proceedings has been conducted that considers the following: where the paper is positioned in time – past, present or future; whether the paper is discussing a direct link with industry, the community or the environment, what level of critical reflection the author reflects in the way in which her/his topic is discussed; where the paper is positioned with respect to systems theory; and what, if any systems model development is proposed and/or applied. This multi-way analysis has been applied to the 66 papers in the ANZSYS07 proceedings, not all of which were presented. The analysis only applies to the written documents – not to any discussion that ensued from conference presentations.

Keywords

Critical reflection, Systems theory

INTRODUCTION

The theme for ANZSYS07 was systemic development: local solutions in a global environment. The call for papers went out for local solutions in a global environment. 'As the call to solve intractable problems in a globally-connected world increases, systems thinkers turn towards systemic problem solving.' The challenge issued to the ANZSYS community - both academic and practitioners - was to 'apply holistic, global systems concepts to local situations'. Conference themes were: a globally-connected virtual world; information systems, regional environmental systems, organisational systems, applications of creativity to systemic problem-solving, managing systemic development, critical systems, social systems, conceptual modelling, system dynamics, and any other related issue.

In this critical review of the papers published in the ANZSYS07 proceedings a number of questions arose, particularly with the application of systems thinking to our globally-connected world.

The structure of the paper is as follows: first, the way in which this collection of papers is reviewed is described; secondly, a series of tables is presented according to where the paper is positioned in time – past, present or future. Next, papers are categorised by links with industry, the community or the environment. The level of critical reflection the author demonstrates in the way in which the topic is discussed, where the paper is positioned with respect to systems theory, and what, if any systems model development is proposed and/or applied is also critiqued.

LEVELS OF REFLECTION

Bain, Ballantyne, Packer, & Mills (1999) suggest that there levels of reflection fall into five categories:

1. reporting, in which there is minimal transformation or insight;
2. responding, in which observations or judgements are made without inference or reasoning;
3. relating, in which a superficial understanding of relationships, forward thinking or planning is identified;
4. reasoning, in which theoretical concepts are explored with insight, inference and depth of understanding; and
5. re-constructing, in which a high level of abstract thinking is applied to generate new theory and/or insights based on a deep level of reflection.

The expectation was that all authors presenting at a systems thinking conference would be reflecting at a high level. An analysis of the papers in the ANZSYS07 conference proceedings suggests that this was not the case. Seven papers were appraised as being written in a descriptive manner without inference or reasoning displayed suggesting that these papers were at level two on Bain et al's (1999) reflective scale. In 24 papers a superficial

understanding of relationships, forward thinking or planning was present (level 3). In 31 papers, theoretical concepts were explored in depth (level 4) and in only 4 papers were there evidence of reconstruction and a high level of abstract thinking (Table 1).

Timeline by Reflection Level

When these papers were further analysed to place them on the timeline in which each paper was situated, it can be seen from Table 1 that 16 papers were situated in the past. Twenty-seven papers are situated in the past moving into the present, 15 papers discussed present issues, 8 papers moved from the present situation into the future and no papers described solely future thinking.

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Table 1: TimeLine by Reflection Level

time/reflection	1	2	3	4	5	Total
Past			8	7	1	**16**
Past to present		5	11	9	2	**27**
Present		2	3	9	1	**15**
Present to future			2	6		**8**
Future						**0**
Total		**7**	**24**	**31**	**4**	66

Timeline by Systems Theory

It is also interesting to consider these papers according to systems theory and where these are situated on a timeline (Table 2). For those papers that were situated within a generally systems theory framework 8/11 were looking into the past. Those papers considering social systems, systems dynamics and information technology/information systems were spread along the timeline from past through to considering the future from a present view. Papers that concentrated on conceptual modelling were predominantly situated in the 'past to present' category (7/11). Decision support systems and knowledge management papers took a viewpoint looking into the past. 45/66 papers overall were situated in the past and 21 were either discussing a situation or theory in the present or looking from the present into the future.

Table 2. Time Line by Systems Theory

Theory/past/present/future	Past	Past to present	Present	Present to Future	Future	Total
Complexity		2		1		**3**
Conceptual modelling		**7**	**3**	1		**11**
DSS	2					**2**
Environment		**3**				**3**
IT/IS	1	1	**3**	1		**6**
KM	1	**2**				**3**
Org systems	1	**3**	**3**			**7**
Social systems	1	**4**	2	1		**8**
SSM	1	1		1		**3**
SD	1	**3**	2	2		**8**
Systems theory	**8**	**3**				**11**
Viable systems				1		**1**
Total	16	29	13	8		
	45		**21**			**66**

Practice Link by Reflection Level

When these papers were further analysed to consider reflection levels with industry-based links, it can be seen from Table 3 that research in 19 papers was situated within industry. For these papers, 10/19 authors were reflecting critically or reconstructing (level 4 or 5). For those papers where there was no context base 16/27 authors were reflecting at level 4 or 5. This implies that there appears to be a connection between authors writing theoretically and a deeper level of cognitive processing. Only 5 authors considered systems thinking within a community setting and 2 authors situated there research within the education sector.

Systems Theory by Reflection Level

When this collection of papers was further analysed to consider author reflection level against systems theory utilised, it can be seen from Table 4 that 31/66 authors are reflecting at level 4, 25 at level 3 and only 4 at level 5. This seems to indicate that there are very few 'high flyers' capable of conceptual reconstruction and extending the existing body of systems theory knowledge. Instead, there appears to be a majority of authors using existing theories. It is noticeable that for those authors whose research is in the IT/IS/KM/that 4 papers were at level 2, 8 papers were at level 3 and 5 papers were at level 4.

Model development by reflection level

The majority of papers 51/66 utilised an existing systems model. Of these 51 papers, 23 papers were authored at level 3 reflection and 22 at level 4. For those papers in which existing models were extended or evolved (8/66), only 2 were considered to be at level 5 reflection. Only 2 papers were considered to have developed new systems model development (1 at level 4 reflection and 1 at level 5 reflection).

Table 5. Model Development by Reflection Level

Model/dev/refl	1	2	3	4	5	Total
No model		3	1	1		5
Existingmodel		4	**23**	**22**	2	**51**
Evolutionary				6	2	8
New model				1	1	2
Total		7	24	30	5	66

DISCUSSION

It would seem from this analysis of ANZSYS07 papers that here is a need for this systems thinking community to move out of the past and into the future. The safest papers to write and have accepted, appear to be:

- those papers that are looking back into the past
- use an existing systems theory; and
- be a paper in which the author reflects at level 3 (with a superficial understanding of relationships, forward thinking or planning) or level 4 (reasoning in which theoretical concepts are explored with insight, inference and depth of understanding).

Perhaps, this is a reflection of the wider academic environment in which most authors are situated. Any research output must satisfy the requirements of research in a managed tertiary education sector.

It would appear that this collection of papers (with a very small number of exceptions) falls within the safety margins of such environmental constraints. New model development was present in only 2 papers, and extensions to existing theory in only 8 papers, Only 5 papers could be considered to be at a reflection level of 5, where a degree of reconstruction at a high level of abstract thinking, generation of new theory, and/or insights based on a deep level of reflection were evident. Thinking deeply and new model development requires a mindset, mind space and time. A tightly managed tertiary education sector does not appear to be conducive for such thought processes to take place.

CONCLUSION

In this critical review, 66 papers from the ANZSYS07 proceedings have been analysed to gain some insight into the levels of critical reflection present. It is disappointing to note the very small amount of original thinking taking place in a community of people who pride themselves in the ability to think critically.

The challenge is there, despite the stultifying academic environment, to sharpen our thinking, extend the boundaries of systems thinking and apply these ideas to the difficult problems in the world.

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Note: "*" signifies plenary paper.

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