How Can We Incorporate Relevant Findings from Psychology into Systems Methods?

John N. T. Martin, Open University, Milton Keynes, UK

ABSTRACT

A study of citation patterns shows that it is rare for Systems writers to cite findings from the cognitive sciences, though common in writers in analogous areas. This raises the possibility that there may be useful areas of modern psychology that systems practitioners are currently neglecting. Behavioural economics is suggested as a potential example, introducing the idea of a ‘decision illusion’, the distinction between System 1 and System 2 brain systems which are believed to underlie these illusions, and a range of examples. This raises the problem of how to interface descriptive (and usually reductionist) domains such as psychology with normative systems methods. It is suggested that this can be managed by switching attention from ‘How to do it’ to ‘What might go wrong’, raising the possibility that systems methods might be much enriched by a systematic analysis of failure modes.

Keywords: Ariely, Behavioural Economics, Decision Illusions, Failure Modes and Effects Analysis (FMEA), Information Validation, Intuitive Judgements, Kahneman, Soft Systems Method, System 1 and System 2, Systems Methods

INTRODUCTION

Martin (2010) used SCOPUS to analyse the citation patterns of Systems journal articles. He used a number of techniques to identify the core group of journals that appeared to be those most widely used by Systems authors, and then identified a group of 21 authors using those journals who were either widely recognised Systems authors and/or amongst the authors who published most frequently in those journals (two strongly over-lapping criteria). These formed his ‘Systems panel’.

In addition, he selected a set of ‘benchmark domains’ from a number of other academic fields that are also concerned with tackling complex real-world issues (the creative problem solving literature, the naturalistic decision making literature, the action learning literature, the group decision and negotiation literature, 

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and the operations research literature). While some of these were represented by particular key academics, others were represented by particular journals, or particular ‘special issues’ of journals that were devoted to the relevant field.

Martin’s main results are summarised in Table 1. ‘Systems-1’ to ‘Systems-21’ are the 21 Systems authors. The benchmark domains are individually labelled. In the case of Creative Problem Solving, there were three separate authors, all of whom are very well known in that field.

Taken together, the Systems and benchmark areas encompassed 480 papers, which included 10,602 citations. An examination of the titles and journals of each of these citations using very broad criteria identified 16.6% that could be construed as ‘psychological’ in nature (though if tight criteria had been used – e.g. restricting it to explicitly psychology-based journals – the percentage of ‘psychological’ citations amongst the Systems authors would often have been very much lower – in some cases zero). When this was broken down by individual authors and benchmark domains:

• Only one author on the Systems panel had more than 16.6% of ‘psychological’ references (lowest = 1.5%, median = 5.2%, highest = 19.2%);
• Only one benchmark domain had less than 16.6% (lowest = 11.2%, median = 31.3%, maximum = 65%).

A Mann-Whitney ‘U’ test on the separation between the Systems and benchmark groups was highly significant ((p<<.001 on a one-tailed test).

While citation studies of this kind are open to many criticisms, the gap suggested by these figures is so large that it is hard to avoid the conclusion that it reflects a robust and real difference. Indeed, since ‘soft’ Systems is the area of Systems where one might most expect to find links to the psychology literature, a ‘quick and dirty’ way for readers to validate the findings of Table 1 for themselves is to take any major text on the Soft Systems methodology (e.g. Checkland, 1981; Wilson 1984, Checkland & Scholes, 1990) and examine the bibliography. At a more subjective level, the author of this paper was originally trained as a psychologist, but then spent over 30 years in a Systems department, and the gap between Systems (even soft systems) and psychology also reflects his personal experience of the field.

Overall, the conclusion has to be that the psychology literature (even interpreted very broadly) is rarely quoted by Systems authors, whereas it is quite frequently quoted in similar areas of practice. Indeed for some of these adjacent fields, psychology (and cognitive science generally) appear to be the major reference domain, with up to 65% of references being clearly psychological in nature.

This difference does not, of course, mean that Systems people are unaware of ‘the human element’ – after all the encompassing of the human element is the main thrust of soft systems, and many systems practitioners are very skilful at working with people. But this knowledge and skill rarely seems to translate into ‘psychology’ citations, whereas in other, apparently adjacent, fields, it does.

This difference is an intriguing puzzle in itself, and one could speculate about various historical reasons why it might have arisen. But it also raises the obvious question as to whether it is still a useful divide, and whether there may be areas of modern psychology that Systems might usefully draw upon.

Psychology and the cognitive sciences form a vast domain, and it would be utterly beyond the scope of a single paper (and the competence and resources of this author), to attempt a general review of cognitive science from the Systems perspective.

However, it is possible to offer particular examples of areas that seem promising, as an ‘existence proof’ of the possibility of useful bridge-building in the hope that others will be sufficiently interested to extend the inquiry further.
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