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Response to paper "Systems Thinking" by D. Cabrera et al.: Systems thinking from a critical systems perspective[1]

Martin Reynolds
Open Systems Research Group, The Open University, Walton Hall, Milton Keynes, UK. MK7 6AA
Tel.: (+)44 (0)1908 654894. E-mail: m.d.reynolds@open.ac.uk.

1 Perspectives on systems thinking

1.1 Inviting other perspectives

Inviting further perspectives is both welcome and consistent with the rules on systems thinking presented in this significant and thoughtful paper, *Systems Thinking*. 'Perspective-taking' is the last of the four rules of DSRP following Distinction, Systems-making, and identifying Relationships. To make my own summary in terms of DSRP. First, the authors make Distinction of systems thinking in terms of four fundamental patterns or rules; they then develop a System of systems thinking illustrating the Relationships within and between these patterns, circumscribed by a (subjective) Perspective on systems thinking as an emergent property of a cognitive process associated with conceptual thinking. Inviting other perspectives is a further key attribute that significantly marks out systems thinking in terms of an ongoing conversation; a process, incidentally, that speaks appropriately to the concerns of formative (naturalistic) rather than summative (scientific) evaluation (Guba and Lincoln 1986). In this spirit, I use this space to begin a conversation from my own perspective.

After briefly making my Distinction of systems thinking, I then use this as a frame of reference – a System – to explore Relations with DSRP from a critical systems Perspective

1.2 Meeting perspectives: a triadic framework perspective

"The core aspects of systems thinking are gaining a bigger picture (going up a level of abstraction) and appreciating other people's perspectives" (Chapman 2004 p. 14)

Jake Chapman's distinction builds upon Richard Bawden (1998) in identifying two transitions implicit in systems thinking; one, towards holism, and another towards pluralism. There is in my view a third critical dimension of what I call 'framing' where boundaries inevitably need to be made and questioned on the inevitable limitations of being holistic and pluralistic. In my view, t
his confers a sense of grounding, purposefulness and responsibility in systems thinking.

In sum, the system of systems thinking that I find helpful (Reynolds 2007) derives from a critical systems perspective constituting three elements – (i) a framework for understanding (fwU) complex interrelationships, (ii) a framework for practice (fwP) when engaging with different perspectives, and (iii) a composite framework for responsibility (fwR) acknowledging the limiting and integral features

[1] Cabrera, D., L. Colosi, et al. (2008). "Systems Thinking." Journal of Evaluation and Program Planning.

of fwU and fwP. Systems thinking is likewise for me a pattern; a triadic framework of dynamic interplay between these three components or sub-frameworks. The overall framework belongs to the same genre and is of similar substance as the 'triadicity' of Habermas' three worlds – *the* natural world, *our* social world, and *my* internal world (Habermas 1984) and Ulrich's 'eternal triangle' of boundary critique – judgements of 'fact', value judgements, and boundary judgements (Ulrich 2003). There are many other influential expressions of triadicity (including Charles Peirce's nineteenth century semniotics and theory of representation) but here I want to surface its correspondence with DSRP.

One clear point of correspondence lies with the authors' own reference to similar triadic interplay, including Korzybski's semantics – content, context, and concepts – and Guilford's framework of divergent thinking – content, processes, and products of the interaction. Conceptual (systems) thinking is regarded by the Cabrera and his colleagues as a *product* of the interaction between a context of *process* rules (DSRP) and content (as with Table 2 in original paper). Figure 1 illustrates the two perspectives on systems thinking expressed in terms of triadic interplay.

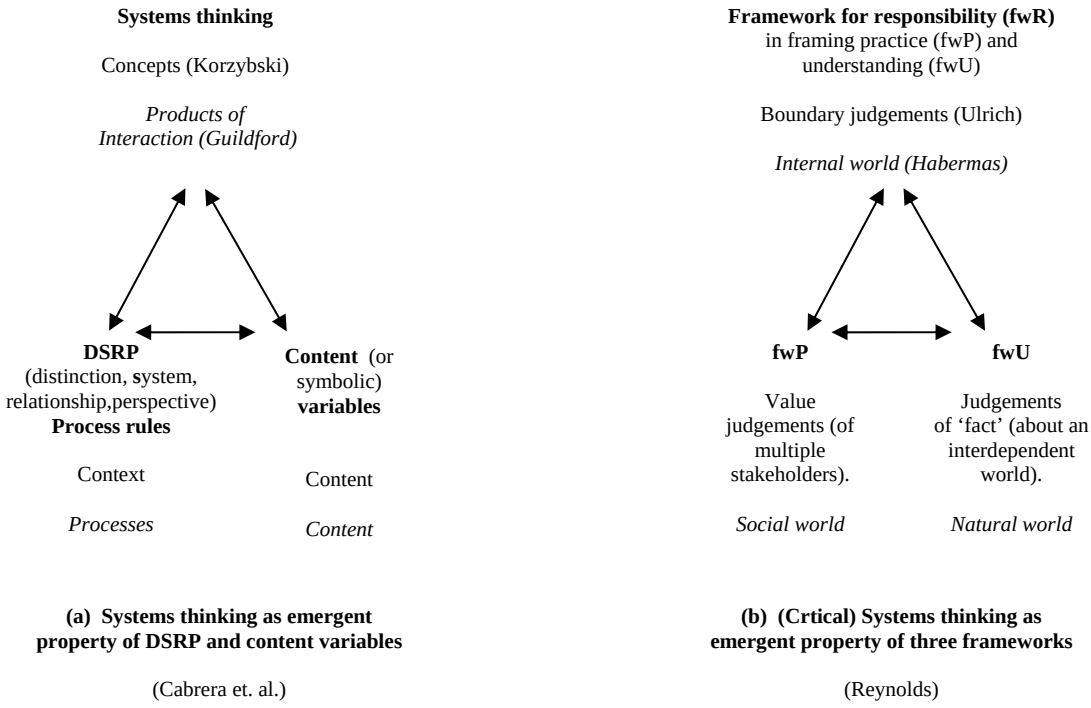

Figure 1 Two perspectives on 'systems thinking'

The two perspectives in Figure 1are not set up to compete, but rather to converse. They clearly correspond in triadic attributes. DSRP corresponds to the fwP, a framework of rules for guiding practice in systems thinking. Likewise, the 'content' ("symbolic variables" of DSRP) corresponds to the domain of fwU – the access we have to realities of the object world. But to what extent might 'systems thinking' in Figure 1(a) correspond to the framework for responsibility in Figure 1(b)? To appreciate this we need to first distinguish what the authors helpfully identify as the 'subject-object' domain of each perspective.

Figure 1(a) is a perspective on the cognitive *processes* underpinning systems thinking whereas Figure 1(b) is a perspective on variant though integral *dimensions* of systems thinking. The distinction here partially mirrors that of the authors in their valid concern to demarcate systems thinking as 'process' from conventional descriptors that do little more than provide 'taxonomies'. The difference is that Figure 1(b) does describe process. Systems thinking is presented in terms of an integral triadic pattern

– no one framework operates exclusively. Claims of working exclusively - such as when eco-fundamentalists assume 'holistic' awareness of the world (privileging fwU) or when participatory enthusiasts claim unadulterated appreciation of pluralistic viewpoints (privileging fwP) - thus ought to be subject to healthy skepticism.

Whilst the two perspectives share recursive triadic patterns, they differ at the level of recursion. Figure 1(a) focuses on *cognitive* processes – the mechanisms of human thought, whereas Figure 1(b) attends to *socio-cultural* processes – the human intent behind systems thinking. In appreciating these different levels, a meaningful conversation between the two perspectives can be undertaken. In what follows I use perspective 1(b) as a system to evaluate (converse with) perspective 1(a).

2 Conversing with systems thinking

Whilst clearly intending to focus on the practice of systems thinking, the paper *Systems Thinking* principally provides a very effective fwU – a framing that provides a particular understanding of systems thinking. Most of this conversation is therefore focused on the fwU rather than fwP or fwR dimensions. Systems thinking is understood as an emergent consequence of four elements, DSRP - each element being a construct of particular dualities (identity/ other; part/ whole; affect/ effect; and subject/ object) and each itself a concept to which the DSRP rules apply. There is here a recursive simplicity, elegance and quality of universality in tune with Aristotle's teleology of four fundamental causes (material, form, efficient and final). In a postmodern age of eulogising 'complexity' this is indeed quite refreshing!

The authors helpfully distinguish systems thinking from problem-solving techniques, taxonomies of ideas, plurality of methods, a social movement, or particular instances such as general systems theory etc. They also make clear the distinction between the use of the term 'systems' through distinguishing 'systems thinking' from 'thinking about systems'; the latter referring to 'complex wholes of related parts' being the most common vernacular (as with ecosystem, education system, economic system etc.). The distinction is helpful in clearing ground between systems thinking and related disciplines associated with systems sciences (e.g., complexity and chaos theory). It respects rather than struggles against two different perceptions of 'systems': one, as with systems thinking, an epistemological construct; the other, as with systems sciences, more an ontological entity. But herein also lies a problem. Perhaps there is a case for our being more consistent with terminological use and indeed more adversarial in the use of 'system' as a conceptual construct.

My own preference is to reserve 'system' as a conceptual construct and use the term 'situation' for demarcating the unbounded ontological complex realities variously referred to by systems thinkers as messes (Russell Ackoff), the swamp (Donald Schön), wicked problems (Horst Rittel), or indeed the 'noise' or 'tangled overgrowth' used for describing the terrain of systems ideas by the authors of *Systems Thinking*. My reason for disciplining a distinction between system and situation is to remove the possibility of confusing 'map' for the 'territory' (to borrow Korzybski's important adage referred to in the paper). Not making this distinction of 'system' as 'map' risks falling into the trap of confusing systems as some fixed ontological entity outside of human responsibility. With this in mind, I find the authors' adoption of 'complex adaptive conceptual system' (CACS) problematic. There is in my view a fundamental contradiction in the co-joining of words 'complex' and 'system'. For me, systems are human constructs used to make sense of (understanding) and to actively transform (through practice) complex realities. The *intent* behind systems thinking is to simplify and make manageable complex realities. The notion of a complex system is therefore in my view an oxymoron. Perhaps not quite of the same league as 'military intelligence' or 'corporate responsibility', but somewhat pernicious nevertheless. Now that may appear a little bold given the widespread currency of complex adaptive systems (CAS) theory. But let us not forget that CAS originates from the natural and cognitive *sciences* carrying more the tradition of 'thinking about systems' rather than 'systems thinking'. Ought we (and I include here such luminary systems thinkers as Fritjof Capra amongst others) be wary of perpetuating the myth and confusion of 'maps' being the 'territory'? It seems to me that a key underplayed intent of systems thinking – exemplified in much of the paper - is to make simple the complex in a transparent (and thereby questionable) manner in order that we might establish meaningful conversation about complex realities.

In understanding more precisely the elements in DSRP, I then begin to ask what is it that makes System a particular type of Distinction – a particular way of mapping the territory? Is it merely "a whole made of two or more related parts" or is there some deeper defining feature that actually makes parts relate together? The final paragraph in the section describing the case study evaluation using DSRP hints at an answer: "[…] humans may purposefully limit themselves to avoid intellectual gridlock as a matter of pure functionality. It is not practical nor is it feasible to take *every* thing into account. This is true for most endeavours and certainly holds true for evaluators […]" (original italics). Given the increasing insight from complexity sciences that *every* thing indeed connects, my inclination would be to suggest that *all* endeavours need to enact limitations. It seems to me a function of systems thinking to make such limitations explicit. But more importantly the statement reveals the idea of 'purpose' as a defining specific feature of System-making in contradistinction to Distinction. Thus 'purpose' can define how a whole system is bounded and sub-systems identified (cf Churchman, 1979). For example, the simple rules of DSRP provide a system devised *for the purpose of* making sense of and enabling action in the (complex) 'noise' associated with ideas on systems thinking. Might 'purpose' be used as a Relational attribute between Distinction and System in the particular system of DSRP?

Moving on to the Relations component of DSRP, the authors enrich our understanding of *affect* and *effect* amongst System parts and, significantly, between system and wider system. This is welcome as in my experience systems thinking is sometimes limited by, firstly, a predominant focus on precisely defined *causal* relationships as against less well-defined though important relations of influence, and secondly, a focus on factors *affecting* a system as against ethically important effects of a system on its 'victims' (Reynolds 2004; Reynolds 2006).

Systems Thinking provides an accessible guide to practice – fwP - in systems thinking at the level of cognition. This is helpful not just for guiding practitioners not well-versed in systems methods and with limited time in becoming familiar with the array of different methodologies (as the authors point out), but also for systems practitioners themselves wishing to actively develop their traditions/ methods/ practices notwithstanding the sometimes overpowering sense of tradition from which practitioners and their methods originate. However, the difficulties arising in shifting attention from framing an *understanding* of systems thinking towards framing *practice* cannot be over-emphasised. It is a shift that crystallizes the importance of Perspective in the DSRP pattern. Meaningful engagement with multiple perspectives remains arguably the greatest challenge to both systems thinking and evaluation. With it carries the onus of responsibility amongst practitioners – the fwR – avoiding complacency and righteousness in assuming complete understanding and appreciation of all perspectives.

3 Systems thinking and evaluation

The beginning of a conversation between two systems of systems thinking - Figure 1(a) as a cognitive endeavour, and Figure 1(b) as a socio-cultural endeavour imbued with human intent (*to* understand, *to* practice, and *to* be responsible) - provides a line of Distinction between systems thinking and critical systems thinking. The latter System from a critical systems Perspective corresponds to the concerns and processes of evaluation, where evaluation might be considered as a continual interplay between *judgements*: judgements of 'fact', value judgements and boundary judgements - Figure 1(b).

The short dialogue contrived here might therefore be regarded as the beginnings of a conversation between the object domain of systems thinking and the object domain of evaluation through a critical systems perspective. In my view this conversation is long overdue and we owe much to the co-authors of *Systems Thinking* in suggesting meaningful parameters for dialogue. I look forward to continuing the conversation.

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