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Towards cyber-systemic thinking in practice

Ray Ison[1]

ABSTRACT

This paper is an invitation to be reflexive; reflexivity is a second-order process or reflection on reflection. The possibility that a reader might experience a reflexive moment is sought by avoiding a narrative trap: to believe the 'coming to' of the issue title implies a state to arrive at, carefully planned, a purposeful journey, pursued by an enlightened individual devoid of all social relations. The author thus begins situated in a social system. Following Maturana, a social system is explained, as is what constitutes, or triggers, change, in a social system. An example of granting rivers sentience in law as an expansion of the social is explored

KEYWORDS

Structural coupling; relationships; traditions of understanding; emotioning; cycles of appreciation; enthusiasm

[1] Address correspondence to Ray Ison, Ph.D., Professor of Systems, Applied Systems Thinking in Practice Program, The Open University, Walton Hall, MK7 6AA E-mail: ray.ison@open.ac.uk

Change in a Social System; Change in a Structure-determined System

The title of this special edition and the espoused rationale are invitations that open-up a reflexive space for an author who must imagine who a reader might be; it is an invitation to be reflexive on and in one's doings. Being reflexive is a second-order process such as reflection on reflection. The challenge in my doings is to create the possibility that a reader, reading, might also experience a reflexive moment. The desire for such a possibility is what I have come to term 'taking a design turn.' More about that later.

Framed as it is, participating in the generation of this special issue invites several modes of doing across different domains: doing history, autobiography, explaining, offering distinctions, seeking critical incidents and other domains each of which might bring forth different accompanying emotionings (affection; fear; hubris; enthusiasm etc.). The trap I seek to avoid is the possibility that one develops a narrative as if the 'coming to' of the issue title implies a state to be arrived at, or a carefully planned, purposeful journey, something pursued by an enlightened individual devoid of all social relations. For this reason, I begin by situating myself as within a social system. And in the spirit of Humberto Maturana, as much of my doing is, if I make that claim then I need to begin by offering an explanation for a social system and what might constitute change, or triggers for change, in a social system.

I have heard Maturana claim that before explaining a social system it is necessary to ask what is it that we experience when we claim we experience the social?[i] My understanding of his answer is that the social arises in the reciprocal experience of others arising as legitimate others in our living i.e., the operation of the biology of love. Over and above structural drift in a culture, Maturana suggests that there are two main means by which more rapid changes in a social system may be triggered: (i) by encountering novel or 'different' others that perturb one's established patterns of understanding as when travelling into new areas or countries and (ii) moments of intense emotion in relationships where the desire for a future

for the relationship is at stake – as with a spouse, lover, colleague or friend. I am sure there are other 'major change mechanisms' that operate though the ones I wish to elaborate may be considered variants on these two i.e., through:

- accepting or rejecting explanations;

- being open to differences that make a difference – the act of making a distinction in relation to ones' self – which gives rise to experience;

- avoiding persistent compromise in a relationship thus maintaining enthusiasm and/or love.

I also want to make the point that the legitimate other who may arise through love may be another person but may also be another species or part of the biophysical world (what we mistakenly call 'the environment'). From this perspective, the phenomena that give rise to the invention of terms such as Anthropocene, Econocene or Capitalocene exemplify cyber-systemic breakdown and a failure of our social system in the sense I am using the term 'social system' (Kunkel 2017; Ison et al 2018). But I do not want to start out in an emotion of fear or despair, though these easily arise in contemporary living (Bell 2017).

In the Maturanan sense, because I am sitting, writing this paper, it means that my organisation as a human being continues to be conserved even though my structure has changed many times in my life to date (think of a tornado which exists as an organized dynamic of air particles all of which are different at any moment in time i.e., the structure is constantly changing). Yet I can also be understood as a structure-determined system: "A structure determined system is a system such that all that takes place in it, or happens to it at any instant, is determined by its structure at that instant. We living systems, as molecular systems, are structure determined systems" (Maturana n.d).   But as Maturana (ibid) goes on to explicate: "the structure of a system is open to change, and can change in two ways:

1) structural changes through which the organization of the changing system is conserved; I shall call these changes of state [my example above of me as a human being]

2) structural changes through which the organization of the structurally changing system is lost, not conserved; I shall call these disintegrative changes [e.g., death of an organism or 'death' of a government]

In changes of state the operational characteristics of the system change while it conserves its class identity. In disintegrative changes, as the original system disappears, something else arises in its place."

Some clarification is called for at this point. If I accept the explanation that I can be understood as a structure determined system, as I do, then no changes over my lifetime have been 'caused' in the systematic or determinant sense by others or outside factors or forces. On the other hand, I have changed – an example of what Maturana describes as conservation of organisation but changes in state. Stepping into a reflexive space I can choose to discern my life to date as operating in multiple domains with different elements and configurations i.e., as different systems (understood as epistemological heuristics rather than ontological entities). Whether these are best treated *as if* social systems is, however, another question because there is a big mismatch between what I, following Maturana, have claimed gives rise to a social system, and that which we use in every day speech to talk about the social, or a social system. A social scientist may claim that government X exemplified a social system, but on the basis of my claims here about what constitutes the social most governments would 'fail the test' as to being a social system.

This introductory discourse on change is designed to explicate the methodological approach I have taken to this paper. My coming to cybernetics has not been caused by any person or event. What is very clear to me are those moments of living in a conversational and praxis

milieu in which the nature and trajectory of my structural coupling altered. Many of these were, of course, internal changes but always in response to perturbations brought about in particular relational dynamics including people, explanations, new distinctions and thus experiences. The sample of moments and milieus that follow are not chronological and constitute a choice under the limitations of time and space. They convey, I hope, a cybernetic flavour.

Relationship making, maintaining and breaking

Before departing this introductory narrative about change I want to connect to the work of Geoffrey Vickers (e.g. Vickers 1965) and, via Checkland (e.g., Checkland 1981; 1999; Checkland and Casar 1986), to the work of C. West Churchman (Churchman 1971). This lineage was explicated in illuminating detail by my colleague Chris Blackmore (Blackmore 2009). Vickers' idea that most speaks to me is the dynamic, systemic nature of what he calls cycles of appreciation that are constituted by choices (or non-choices) about relationship making, maintaining and breaking. The design of inquiring systems, which following Checkland (2002), I call 'systemic inquiry' (Ison 2017), is a way of framing what I am doing here. It is also what Chris and I have done, and invite our students to participate in, through our design of a core module in the Open University (OU) MSc in Systems Thinking in Practice (STiP) called 'Managing systemic change: Inquiry, action and interaction' (Ison & Blackmore 2014).

As I outlined in an editorial to a special edition of Systems Research & Behavioral Science that celebrated Vickers' work (Ison 2005): Sir Geoffrey's contribution was to think and theorise about the processes of managing that he was involved in. He argued that managing was not an activity that could be quantified or rationalised or put into some algorithm, but always involved a very human ability to make judgements about the nature of situations,

judgements about possible actions and their consequences, and judgements about values. …These ideas went very much against the current orthodoxy, which was more concerned with determining efficient means of reaching pre-specified goals and emphasised the mathematical and quantitative aspects of planning."

What I find of value from Vickers' work is that through his own reflexivity he came to understand the primacy of relationship, a phenomenon that is recursive, reciprocal and involving the key cybernetic notions espoused by Wiener (1948) of feedback (i.e., control or coordination) and communication even though Vickers did not express it in these terms. As I outlined, "at the core of his concerns was the question of 'relationship' which he characterised as the relationship between 'the forces which compose the system under observation, or between that system and its environment.' Vickers was working with systems thinking before the epistemological shift had occurred from 'hard' to 'soft' – from seeing systems as 'things' in the world rather than constructs used as epistemological devices (Checkland 1999). My perception is that what attracted Vickers to Systems was the explanatory power of the intellectual field in relation to his own reflections on practice (Ison 2005).

I came to Vickers' writings from a background in plant-ecophysiology and agriculture. As an undergraduate my formal courses were, in conceptual terms, devoid of human beings as active subjects. Thus, when Vickers said, and I read: 'Human Systems are Different' his work resonated with my own questioning of the ways in which science excluded social processes based on understandings of what it is to be human. Later, with my colleague Richard Bawden we wrote (Bawden and Ison 1992 p. 30):

> The work of Vickers (1983; 1984) is relevant to the activities of field-crop ecosystem researchers as members of organisations. Reviewing his life's work as a member of many organisations, Vickers (see Vickers, 1984; Checkland and Casar, 1986) recognized that his actions were based on "an appreciative system" comprised of:

i)   a notion that the cycle of judgements and actions are organized as a system;

ii)   a separation of judgements about what is the case ("reality judgements") and judgements about what is good or bad, ("value judgements");

iii)   a concept of action judgements stemming from reality and value judgements;

iv)   an insistence on 'relationship maintaining' as a richer concept of human action than the popular but poverty-stricken notion of goal seeking;

v)   a rich concept of day-to-day life as a flux of interacting events and ideas.

If an "appreciative system" such as Vickers is adopted it follows that the 'single problem-single answer' approach which scientists often bring to social issues is likely to be ineffective'.

We were drawn to Vickers' work because of this latter phenomenon – the failure to see agriculture as a human activity and which made sense (to us) to see also as socially constructed. In his own way Vickers appreciated that we make and remake nature every day and thus, must take responsibility for what we do. Much of my subsequent research has been concerned with the design of systemic processes to generate new understandings and practices in relation with the so-called 'natural' world - for altering the "standards of fact and value" in terms of Vickers' appreciative system.

To summarise thus far: my coming to cybernetics has been markedly influenced by encountering intellectual lineages in which my own particular traditions-of-understanding are lived and conserved (Russell & Ison 1993). The main three I have highlighted thus far as relevant to my history are: (i) Maturana and the biology of love; (ii) Churchman and Checkland for the design of inquiring systems, and (iii) Vickers' understandings of appreciation based on relationship (plus his reflexive praxis). The milieu in which these explanations became relevant to me was that of a small agricultural college, Hawkesbury Agricultural College, on the outskirts of Sydney, Australia where I accepted my first post-PhD academic post in 1982 (see Bawden and Packham 1993).

Being Open to Experience

A Creative Intellectual Milieu at the Margins

Within the Hawkesbury milieu I first became aware of the different lineages that had evolved in relation to systems and cybernetics as exemplified through societies such as the American Society for Cybernetics (ASC), the ISSS (International Society for the Systems Sciences) and the Systems Dynamics Society. Aware, much later, that this institutional complexity was constraining the overall intellectual field I combined with Gary Boyd at an ASC meeting at Renasselaer Polytechnic, Troy NY in July 2010 to argue the case for reconsidering the field as cybersystemics (see also Boyd and Zeman 2007; Ison 2016).[ii] I have tried to hold to this position ever since and will do so now in the remainder of the paper.

My long-term friend and collaborator David Russell was the first to introduce me to cybernetics in a manner that was, and remains, invitational. On Friday, May 9th, 1986, David hosted a workshop at Hawkesbury to explore the work he had done whilst on a sabbatical leave; the paper he wrote that formed the basis of our discussions '*How we see the world determines what we do in the world: preparing the ground for action research*' remains as relevant today as I found it then. We have marked over 30 years of collaboration with the publication "Fruits of Gregory Bateson's epistemological crisis: embodied mind-making and interactive experience in research and professional praxis" (Russell and Ison 2017) in a special edition of the Canadian Journal of Communication on the theme: 'At the Margins of Cybernetics' (Theophanidis et al 2017). It was with David and another colleague, and Maturana scholar (Lloyd Fell),[iii] that I attended my first Maturana workshop in Melbourne in 1993. Maturana's work became, and has remained, relevant to much that I do under the rubric of cybersystemics.

Intersections with Systemic Family Therapy

Soon after I began my collaboration with David, my partner, Cathy Humphreys, began a PhD in social work; the thesis (Child Sexual Assault Disclosure: Mothers in Crisis) drew on

cybernetic understandings, as they had then been applied within systemic family therapy, as well as feminist post-structuralism (Humphreys 1991). Having been invited to help with reading and commenting on chapters, especially those related to systemic family therapy, I had an opportunity that can be understood in terms of relationship maintaining and/or love, to meaningfully engage with the cybernetic literature that my partner was able to synthesise. It was thus pleasing for me, nearly 20 years later, to discover that my book 'Systems practice: how to act in a climate change world' (Ison, 2010) had been taken up and used in the marriage and family therapy Doctoral program run by the University of Louisiana at Munroe (e.g., McClendon 2016).

Humphreys (1991) argued that the experience of mothers in her study was 'explained most clearly by looking first through the lens of second order cybernetics…..and then ideas from post-structuralism' (p. 246). The second order cybernetic principles that most extended 'understanding of mothers of sexually abused children were perception, the individual in context, …recursion, orders of recursion and the principle of circular causality' (p.247). Humphreys (1991) like many other feminist theorists and, more recently international development practitioners and theorists (e.g. Green 2016), went on to argue that second-order cybernetics 'failed to develop an adequate explanation for the exercise and mechanism of power' (p. 283). My own understanding then and now was that this scholarship represents a misreading of power within the second-order tradition. Attending to this issue, which is persistent, I have, in the second edition of my book (Ison 2017), argued that incipient cybersystems practitioners might be advised to: "name power as part of all that [they] do if [they] think naming it helps [their] praxis; remember[ing] that … reflexive systems praxis has the potential to reconfigure relational dynamics in situations of concern and is thus a praxis that can 'undo' configurations, dispositions and discourses of power" (p. 340).

Enthusiasm as Theory, Biological Driving Force and Methodology

In several publications, I have accounted through reflexive stories, my arriving in cybernetics as an embodied knower mainly over the period 1989-1994 (Ison and Russell 2000a; Ison and Russell 2000b, 2007; Russell and Ison 2004; 2005). This was a particularly rich and rewarding period both personally and professionally and included my move from the University of Sydney to The Open University (UK) at the end of 1993.   My first story relates experiences I had in the early 1980s of development failure set primarily in Tanzania and my conclusion that the failure was best explained in terms of the misplaced understandings of the would-be developers (Ison and Russell 2000). The second story relates the context in which the concept of enthusiasm became meaningful to me as part of my collaboration with David Russell within the Hawkesbury milieu (Russell and Ison 2000); the third is how we built a research project around enthusiasm to replace the dominant information or technology transfer model of doing R&D.

Perhaps most significantly, our understanding of enthusiasm (from the Greek, *en theos*, meaning 'the god within') that we elucidated through our co-research with pastoralists as an alternative basis for doing R&D (CARR 1993; Russell and Ison 2000) has stood the test of time in my own praxis; trusting the emotion of enthusiasm as the motivational driver of relationship has been central to my praxis since this time. We also found that hegemonic and imposed models or programmes which enforce consensus, or compromise, militate against personal enthusiasm and that enthusiasm must be bounded through collective responsibility, transparency and rituals which create a sense of common purpose. We established that enthusiasm could be understood and used as (i) an intellectual or theoretical notion; (ii) an emotion or driving force; and (iii) methodology underpinned by use of narrative (see Russell and Ison 2000; 2017). Maturana and Bateson and others within the second-order cybernetic tradition provided inspiration for our work (Russell and Ison 2017). In our CARR project (CARR 1993) and in subsequent research and praxis situations we have each found our praxis

approach based on enthusiasm robust for designing and doing R&D, undertaking academic

practice and valuable for process designs in uncertain, multi-perspective, multi-stakeholder

situations (e.g. Ison 2016b).

Subsequent stories that have not been told in any systematic manner include how my

understandings from our elucidation of enthusiasm was used to "facilitate" a process of

organisational change in my own University (e.g. Armson and Ison 2001; Ison and Armson

2006), to contribute to the design of a process consultancy in South Africa in 1994 (Cousins

1994) and in reconceptualising, in cybersystemic terms, staff induction (Armson et al 2001),

and other forms of practice e.g. scenarioing (Ison et al 2014).

Towards Cybersystemic Governing

As one who has long held that it is ethical to 'walk-ones-talk' much of my scholarly praxis in

the period 1995 to the present has been within my own university in a series of systemic

action research projects (see Armson 2011) and/or in settings concerned with the co-

evolutionary governance of situations usefully framed as structurally coupled social-

biophysical systems such as river catchments or watersheds (Colvin et al 2014; Ison et al

2018). The latter has been conducted in recent years under the rubric of cybersystemic

governing in the Anthropocene (see Ison 2016a; Ison and Schlindwein 2015;

http://www.open.ac.uk/blogs/govan/). At the core of this scholarship are two key cybernetic

understandings:

(i) governance, or more accurately governing, is a praxis which I frame in the following

terms (Ison et al 2018; submitted):

> Little recent scholarship about governance retains the integrity of its etymological
> roots - the Greek verb *kubernao,* meaning to steer. Ampere (1834) drew on this
> understanding to formulate the science of civil government (see Tsien 1954). From
> these roots Wiener (1948) reformulated the term cybernetics, which unfortunately
> became conserved as a noun rather than a verb. By drawing upon the intellectual

> lineage of cyber-systemics …. we frame governance using the central metaphor of a helmsperson (sailor) steering, or charting a viable course in response to feedback (from currents, wind) in relation to purposes that are renegotiated within an unfolding context — that is, in repeatedly recalibrated responses to uncertainty. The dynamics, between social and biophysical systems are mediated by artefactual technologies – such as the boat - and social technologies - like the rules of a sailing race ... From this metaphor we take the term 'cyber-systemic governance'. We avoid the idea that purpose, or goals, are pre-given preferring instead the idea that 'purpose elaborating' is integral to governing, rather than the narrower idea of goal seeking (Checkland 1985).

(ii) articulating and developing a cybersystemic praxeology capable, when enacted,

institutionalised, invested in, of making a significant contribution to maintaining a viable

structural coupling of humans with the biosphere i.e. cybersystemic governing. To succeed I

would claim we humans need to recover, or rediscover, our cybersystemic sensibilities,

become more cybersystemically literate and build quickly a cadre of citizens and

professionals able to do cyberstemic thinking in practice (Ison and Shelley 2016; Reynolds et

al 2016).

Living and Conserving Cyber-systemic Thinking in Practice

Maturana's invitation to consider the question: what do we do when we do what we do? has,

since I first experienced the invitation, guided much of my own doing. This is the organising

question in Ison (2010/2017) and the OU MSc module described earlier. It is also the

question that will underpin a new book currently under preparation with colleague Ed Straw

concerning what we do when we claim to be doing governing. For anyone with

cybersystemic sensibilities it is readily apparent that our 'governance systems' are no longer

fit for purpose. It would be good if in reinventing what we do cybersystemic understandings

and practices could come to the fore. So, my invitation to you dear reader is to do what you

can to bring this transformation about. Unfortunately, the prevailing paradigm, what Donald

Schön (1995) described as technical rationality, is pervasive and persistent. The place to

start, I would suggest, is with our own practice and, through acting with cybersystemic

awareness and literacy, influencing the process designs and institutions (as in norms, rules of the human game) within which we must function (Ison 2017).

As an example, let me conclude by drawing attention to recent institutional innovations with potential to shift the governance of rivers by reframing them as social systems as outlined above.[iv] New Zealand's lawmakers have recently granted a river the legal rights of a human; a parliamentary vote has ensured "the roughly 90-mile Whanganui River will be represented by two guardians in legal matters that concern the waterway. The legislation marks a monumental victory for the local Māori people, who view the river as 'an indivisible and living whole…'" (http://n.pr/2qi1dbb). Just as a court of human rights, a particular institution, was sought by its designers to enhance the social, with appropriate changes/designs it is possible to admit 'others as legitimate others' into the social. The challenge for future cybersystemists is to invent new institutions, governing frameworks and praxis that perturbs the structural drift of our current 'governance systems' and thus opens up new trajectories for our future living

Acknowledgements

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[ii] See http://www.asc-cybernetics.org/2010/wp-content/uploads/2010/08/GaryBoyd.pdf and http://www.asc-cybernetics.org/2010/wp-content/uploads/2010/08/RayIson.pdf Accessed 2nd August 2017

[iii] http://www.pnc.com.au/~lfell/ Accessed 2nd August 2017.

[iv] The example material draws on Geoff Lawtoon http://bit.ly/2pKSkXC