# 5 Transdisciplinarity as transformation

## A cybersystemic thinking in practice perspective

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## Beyond our current doings

Based on its etymology the prefix 'trans', is usually taken to mean 'over' or 'across' or 'on the other side of', but it also means 'surpassing' or 'transcending' and 'into another state or form' (Brown 1993). Words and the meanings we give to them are tricky; just like our world, nothing about them is really stable.[1] So in these few ascriptions of meaning from the dictionary there are, at least, two competing conceptions – one a linear conception involving a shift from one side to another, as is classically understood with the linear, systematic paradigms of knowledge and/or technology transfer from one person or group to another (Ison and Russell 2007). The other is a systemic conception more akin to the idea of *emergence* from systems theory – the conception that the properties of a whole are different to the sum of the parts as in, I will claim, 'transform' and 'transdisciplinary' (TD).

At this moment in history both 'transformation' and 'transdisciplinary' are popular words and/or concepts.[2] On the other hand 'trans-fats', unsaturated fats that are uncommon in nature but which have been 'commonly produced industrially from vegetable fats for use in margarine, snack food, packaged baked goods and frying fast food starting in the 1950s,'[3] are something to be avoided. The word 'transgenic' refers to something that is vilified by some and idealised by others; it can be understood as a new organism that combines both the systematic (i.e. the transfer of genes from one organism to another) and the systemic (i.e. the properties of a transgenic organism are different to the sum of its parts). I will argue that conceptually and methodologically it is important to be aware of the distinctions between systemic and systematic and the implications each has for how practice is understood and enacted (i.e. systemic or systematic practice).

In this chapter I want to invite you to engage in play with the words that you use, and to do so in a way that is open to exploring the history of words, their etymologies, and the different ways they are used by different individuals and groups. I am not of the school that considers words to carry meanings in and of themselves, and nor do I believe that definitional clarity is essential; I am more concerned with how we each take responsibility for the words we use and how their use affects understandings and practices in our relational dynamics with others (see Ison et al. 2014). The two words I want to play with are *transdisciplinary* (obviously because this is what this book is about) and *transformation*. My preference will be to play with these words from a cybernetics and systems theory and practice background, a field I will henceforth call 'cybersystemics'. I use this term because I consider these lineages to have more

commonalities than differences, although some people consider cybernetics and systems to be two separate intellectual lineages (see Ramage and Shipp 2009; Ison and Schlindwein 2015). The word cybernetics, derived from the Greek *kybernetes,* meaning helmswoman or steersman (Figure 5.1a), is less common in everyday language than the word 'system'; in fact the word 'system' has gone 'feral'. Just as we have done for other 'ferals,' most of us have lost sight of the pedigree of 'systems' and the ways the word or concept, or its derivatives, are used (Figure 5.1b).

I have now used the terms 'systematic' and 'systemic' several times. Figure 5.2 explains how I understand these terms. Whilst 'systematic' is at the bottom of the ladder in my figure, it is really on top in most of what we do in today's world – we do seem to totally undervalue the systemic (relational, interdependent, joined-up) and, as my figure indicates, I seek to give the systemic greater prominence in our thinking and doing. However, I do not want to discard the systematic altogether – it has its place, but at the moment far too big a place. Looking at the relationships between systemic and systematic in the way depicted in Figure 5.2 creates a totality called a duality, just like yin and yang or the concepts predator and prey in ecology. Understanding the world in terms of dualities is a key to practical holism. However, when conceptual pairs negate each other, like subjective/objective or social/biophysical, we create a dualism – an invidious choice of one or the other. Extending my arguments, I would claim that in our research practices in particular there is too much tendency towards dualisms. For example, is it a question of transdisciplinarity *or* disciplinarity, or is transdisciplinarity an analogue for systemic and disciplinarity for systematic, as in Figure 5.2?



**Cybernetics, from the Greek 'kybernetes'**
**meaning helmswoman or steersman**

- A cyber-systemic concept

- Governing - responding to feedback; charting a course (purpose)

- Integrating feedback from the social and the biophysical

- The social-biophysical relationship is mediated by technology (a boat or institution) - eg. the rules of the race

*Figure 5.1a*  The core constituents of 'cybersystemics': cybernetics understood through the sailing analogy is a human activity that involves responding to feedback in real time from the social and biophysical domains as well as their interactions – it is one way of understanding the process of governing
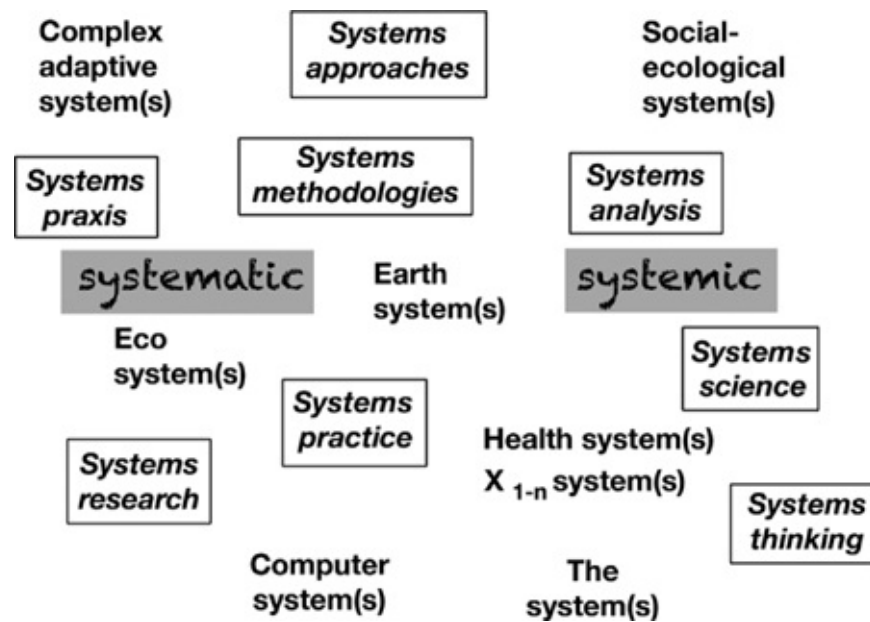
*Figure 5.1b*   The word 'system' has 'gone feral' – there has been a failure to institutionalise narratives, conceptions and praxis except as 'things' (e.g. ecosystems); note the grammatical forms shown in different formats: as noun phrases (boxes); as nouns (underlined) and adjectives (systemic and systematic)

My suggestion to play with the terms transdisciplinary and transformation brings me to the main purpose of this chapter. I wish to explore how, from a cybersystemic theoretical perspective, transdisciplinarity as a field of praxis could enhance future transformations. My transformations of interest are in our ways of governing, thinking, acting, institutionalising and investing within an epoch which we could choose to frame as the Anthropocene (Figure 5.3).

We are in a period new to human history through our collective impacts on the biosphere, so a business-as-usual approach built on current foundations of governing, thinking, practice, institutionalising and investing will fail – the transformations we seek are to build new foundations for what we think and do.

Figure 5.3 summarises much of what I and my colleagues have attempted to transform in the last 20 years or so.[4] Sometimes we have critiqued the current foundations; most of the time we have tried to use and deploy new cybersystemically informed practices such as inquiring, modelling, researching, learning, participating, scenarioing, evaluating, designing, consulting and appreciating. A major focus of our work has been on understanding how *social learning* can operate as an effective process within complex, uncertain, 'wicked', multi-stakeholder contexts as well as exist as a governance mechanism that can attract investment and take on an institutional form (e.g. Blackmore et al. 2007; Colvin et al. 2014; Ison et al. 2015). Along this journey, transdisciplinarity has been of significant interest in both practical and theoretical ways (e.g. Ison and Ampt 1992; Ison et al. 1997; Maiteny and Ison 2000; Ison 2008) but in all honesty it has not been named as the concern that has been at the core of our work, although it has always been present as context, given the contributions made by systems theorists such as Erich Jantsch to the early framing debates (see Jantsch 1970; Bernstein 2015). There are two principal reasons why transdisciplinarity is background rather than foreground in our praxis:

(i) As developed at the Open University, taking a systems approach means recognising that each person only ever has a partial perspective of a given situation and thus it is important, in attempts to transform, to value and enable articulation of multiple, partial perspectives of the situation. and (ii) Since the early 1970s it has been recognised that most situations that are of concern, or warrant transformation, are best understood as 'messes' or 'wicked problems' (see Maiteny and Ison 2000; Ison et al. 2014). In other words we would argue that our praxis is TD or meta-disciplinary, even though we do not often refer to it as such.
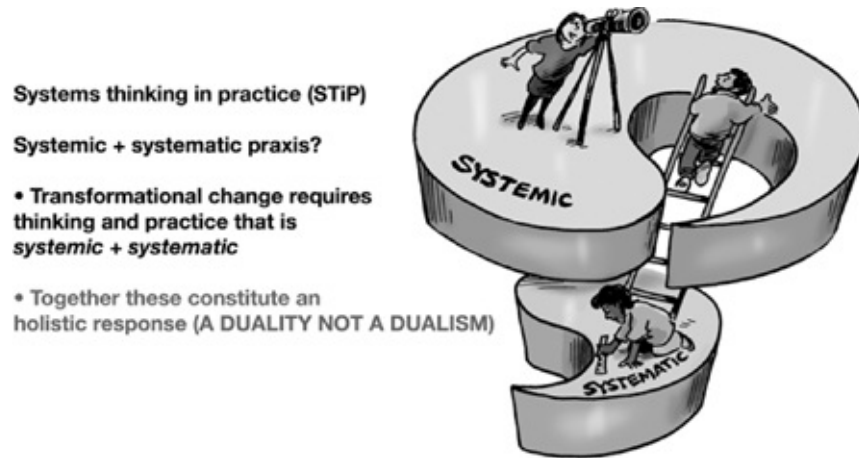


**Systems thinking in practice (STiP)**

**Systemic + systematic praxis?**

- **Transformational change requires thinking and practice that is _systemic + systematic_**

- Together these constitute an holistic response (A DUALITY NOT A DUALISM)

*Figure 5.2*   Systems-thinking-in-practice involves being both systemic (thinking in terms of relationships and dynamics) and systematic (linear, step-by-step thinking); when engaging with complex, uncertain, multi-stakeholder contexts it is preferable to start out systemically

Source: Adapted from Ison 2010.



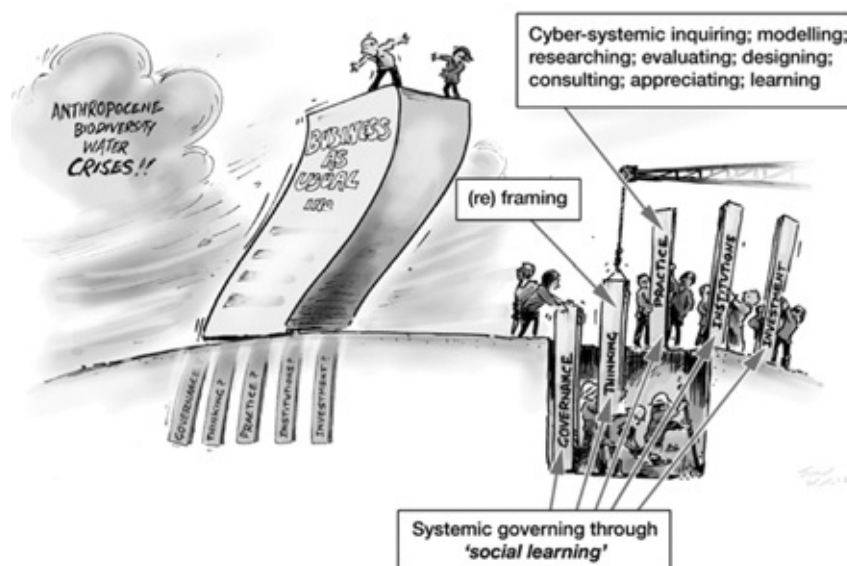Can cyber-systemic transdisciplinary praxis facilitate transformation?

*Figure 5.3*   Can cybersystemic transdisciplinary praxis facilitate transformation?

Source: Drawn to author's specifications by Simon Kneebone.

In the next part of this chapter I explore how transdisciplinarity and transformation have come to be understood within cybersystemic traditions. In doing this my ambition is to make these two concepts practical or usable as vehicles for praxis, which I understand as theory-informed practical action. Then in the following section I illustrate cybersystemic TD praxis through exemplar concepts, methods and practices drawn largely from our own work. TD work is done for a purpose; that purpose, I will argue, is transformation which is addressed in the penultimate section. In the final section I offer some concluding remarks.

## Transdisciplinarity and transformation: a partial history

### Constructing histories

Many contemporary scholars make claims for and about transdisciplinarity and transformation; in most cases these scholars link their work, implicitly or explicitly, to notions of sustainability – which is another important concept in the 'word game' of this chapter! For example, Arora-Jonsson (2016, 99) claims that: 'resilience researchers … (… see articles in the journal *Ecology and Society*) increasingly call for transdisciplinarity, that is, acknowledging multiple viewpoints, cultures, forms of knowledge and epistemologies. The concept of resilience is considered by many as one of the most important concepts in research on sustainability today'. This field of scholarship is not without its critics. Whilst having less to say about 'transformation,' Arora-Jonsson (2016, 99) adopts a critical perspective, noting that 'resilience thinking's disregard for culture, in its imposition of a generalized and positivistic view of the world on complex and unpredictable socio-natural relations has been at the centre of many debates.'

My purpose in pointing to this scholarly background is that I want to introduce some important departure points from this literature[5] by briefly reviewing how the field of cybersystemics has dealt with transdisciplinarity and transformation. To do this well, and achieve my purpose, it will be necessary for you, the reader, to accept my invitation to always consider *what it is that we do when we do what we do*[6] whenever we claim to be doing transdisciplinarity or doing/effecting transformation. Arora-Jonsson's paper is a good departure point for the distinctions I wish to make because it gives an account of the historical connections between resilience thinking and systems theory (2016, 99).

An important aspect for the history of resilience and transdisciplinary scientific practices in the Western world is the introduction of the idea of a General Systems Theory [GST] by Ludwig von Bertalanffy (1968) that had considerable influence in Europe in the 1970s and 1980s. In addition to the technical aspects and its influence on organizational theory as goal oriented systems, General Systems Theory formulated a new way of looking at scientific topics and introduced the interdependence of an object and its environment (Balsiger 2004), aspects central to both resilience and transdisciplinary approaches.
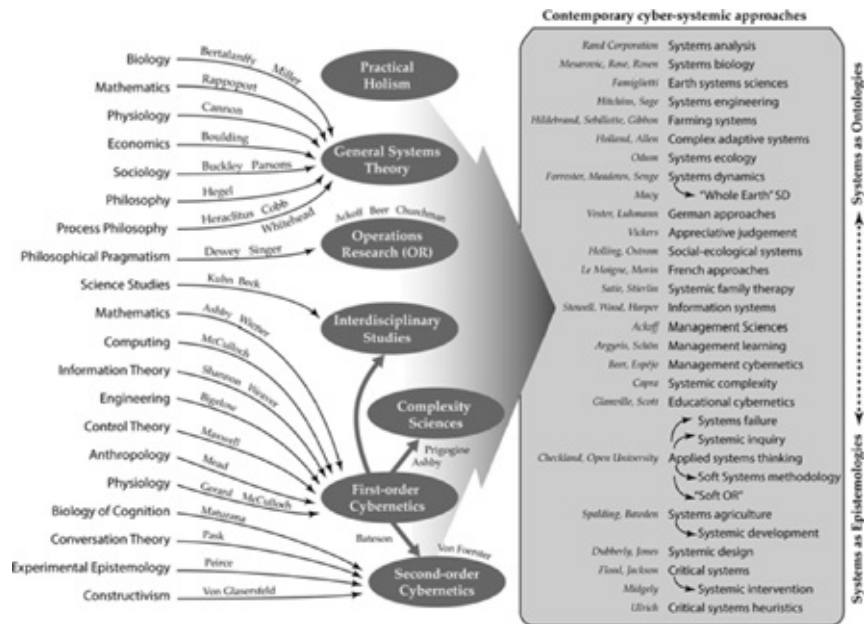
*Figure 5.4*  A heuristic for exploring and discussing different lineages of cybersystemic thinking and practice: a range of, but not all, contemporary approaches is on the right-hand side

Source: Adapted from Ison and Schlindwein 2015.

Based on my experience I would claim the above account is an accurate history *as far as it goes*. To explore what I mean by this claim, I turn to my invitational question and ask: What do we do when we provide a historical account of an intellectual lineage when we write a paper?

Let us consider the Arora-Jonsson paper. It attributes the emergence of resilience thinking informed by GST to Buzz Holling (1973), as is usually the case. Building on the work of Holling and colleagues it is possible to claim that a new scholarly lineage emerged in the 1970s, which I will claim to be the creation, re-creation and conservation of a particular 'resilience' conversation; this enables us to point to *Ecology and Society*, a journal which 'houses' this conversation and a 'resilience alliance' which invests in creating and re-creating and conserving (some may say protecting) a resilience discourse/conversation. In terms of TD praxis 'the ambition is to "integrate"' (Arora-Jonsson 2016, 105). But what Arora-Jonsson (2016) does with the historical account is to describe the status of systems thinking/scholarship that influenced Holling in the 1960s and '70s, and which has been more or less conserved in its historical (i.e. 1970s) form within the resilience discourse ever since. What is missing from Arora-Jonsson's (2016) account, and from many other accounts in the resilience and sustainability discourses, is an explanation of what has happened within cybersystemic scholarship itself since the 1970s (Figure 5.4). What is also often missing is acknowledgement that cybersystemic scholarship has never been homogenous (as is typical of most academic fields) and that Holling's perspective on the field is at best partial.

What is at stake here, from a TD perspective, is the same set of issues that arise when one is concerned with the differences between *TD knowledge production* (seeing knowledge as reified and its products as ontologies, and seeing the praxis issue as that of integration of

different knowledges) and *TD knowing* (a praxis-based concern with multiple epistemologies i.e., an appreciation that all knowing is doing). The distinctions used in Figure 5.4 between systems as ontologies and systems as epistemologies mirror the praxis and power issues that concern TD scholars. Truth and thus power claims accompany ontological commitments, about which Arora-Jonsson (2016) is rightly concerned, but her concerns might extend to any field of disciplinary scholarship, especially those that are tightly controlled by disciplinary gatekeepers. In contrast, seeing systems as epistemological devices for engaging with situations of concern has much more potential to orchestrate TD ways of knowing.

For example, writing not long after Holling (1973), Checkland (1976, 127) argued that:

> the call for 'interdisciplinary teams' to tackle social problems is a popular one, but 30 years' experience in Management Science has emphasized that this is not a successful way to tackle such problems, rather the fact that it is quite remarkably difficult for specialists from one discipline to understand the concepts and language of another. What we need is not interdisciplinary teams but transdisciplinary concepts, concepts which serve to unify knowledge by being applicable in areas which cut across the trenches which mark traditional academic boundaries.[7]

As can be seen from Figure 5.4, Checkland and Holling occupy different places in my mapping of cybersystemic lineages; their different histories give rise to different understandings of transdisciplinarity and the means for its enactment. So for François (1997) transdisciplinarity is 'the general characteristic of cybernetic and systemic concepts, methods and models which provide specialists with a metalanguage for the study of complex situations' (376). He goes on to argue that 'the creation of a …"meta-tools" box is possibly one of the most important goal of systemics and cybernetics' (376). In contrast, Arora-Jonsson (2016) argues that:

> resilience in its transcendent and integrative forms tends towards just that [knowledge as universal, explanatory and proven]. In-depth complexity is sacrificed to the imperative of painting the larger picture and commitment to integration, often through models. In that sense resilience modeling does not inadvertently exclude questions of power, but is in fact designed to do so.

This is not the place to unpack many of the issues Arora-Jonsson (2016) raises, including what modelling, as a form of praxis, may or may not entail. However what her history, and many other histories of cybersystemic approaches miss, is what has happened with the academic and practice fields of cybersystemics beyond the 1970s or '80s. What such histories miss are the 'paradigm wars' within the cybersystemic field which were based on differing epistemological commitments around the notion system (see Figure 5.4); this was a period when debates about power, agency, framing and learning were very active. In this way, the cybersystemic field is not unlike anthropology and psychology, each of which has had a similar 'paradigm conflict'. As outlined in Ison (2010 and Figure 5.4) cybersystemists in their praxis start with two choices – to see systems as ontologies or things in the world which can be studied, modelled and described, or to begin with a situation of concern and engage with it through deploying the concept system as an epistemological device, a way of knowing about or transforming a

situation. A TD scholar faces the same choices – to see TD practice as producing TD knowledge, or to see TD practices as producing TD ways of knowing – or as I suggest in Figure 5.2, to hold these two choices in creative tension from a position of awareness and responsibility. I will say more about this in relation to practical examples later in this chapter.

I now want to turn attention away from transdisciplinarity towards transformation; it is in taking this turn, I will argue, that cybersystemic praxis is able to generate a 'situated knowing/knowledge production', rather than 'integrated' forms of knowledge production that have become the focus of many in the TD field.[8]

## *Transformation as praxis*

Gregory Bateson's famous aphorism 'the difference that makes a difference' (Bateson 1972) could be taken as a statement about transformation. He says: 'what is transmitted around the circuit is transforms of differences. And as noted above, a difference which makes a difference is an *idea* or unit of information' (1972, 318). To appreciate this quote one has to see it within its full context as well as apply some re-interpretation from today's perspective. In the original, Bateson is expanding upon an example of practice – a person chopping down a tree. His argument is that some people do it well and some do not, mainly because of the differences in the perceptions of individuals who experience difference; those who do it well transform this perception into effective action. In many ways effective living could be understood as the unfolding transformation of difference that makes a difference. Put another way, without difference there is no experience (Ison 2010).[9] All experience is situated and embodied and highly governed by the history of humans, individually and culturally, living in language (Ison 2010).

Building on Bateson (1972) it is possible to claim that transformation is central to what we do in our living, an integral part of consciousness that is arising continuously in our relationship with the world around us. Without difference, and thus without experience, there would be no feedback, learning, adaptation and change. Thus for me, cybersystemic praxis, within its epistemologically aware tradition, purposefully seeks to use systems concepts, methods, tools and techniques to generate understanding and change. In a situation of concern, this praxis can bring news of differences to those who agree to use them as epistemological devices so as to appreciate what is systemically desirable and/or culturally feasible in their situation of concern. The choice to deploy cybersystemic understandings as a means to engage with a situation of concern is a purposeful choice within which framing, theoretical and methodological choices have to be made; employing a cybersystemic approach does not have to be a claim to transcendental truth about systems in the world. As an inquiry paradigm it is open to any concerns – including those of gender, politics, power, structures and concepts. From this perspective transformation through appreciating and valuing difference is key to TD ways of knowing.

Within the epistemologically aware tradition of cybersystemics, as exemplified in the lineage from C. West Churchman to Peter Checkland and The Open University (Figure 5.4), the concept of transformation has become central to praxis associated with using systems as epistemological devices (Figure 5.5). Within this tradition a system is understood as something

formulated by people with an interest in a situation who wish to understand, change or improve the situation; their praxis often involves conceptualising a system that might be a useful device for learning about the situation by making a boundary judgement (what is inside and what is outside the system of interest) recognising that a system can be understood as purposeful, and that the transformation process is central to what a system does. As Figure 5.5 shows, the process of transformation has come to be understood and used in a practical way based on the learnings from over 30 years of action research that gave rise to soft systems methodology (SSM) (Checkland and Poulter 2010).
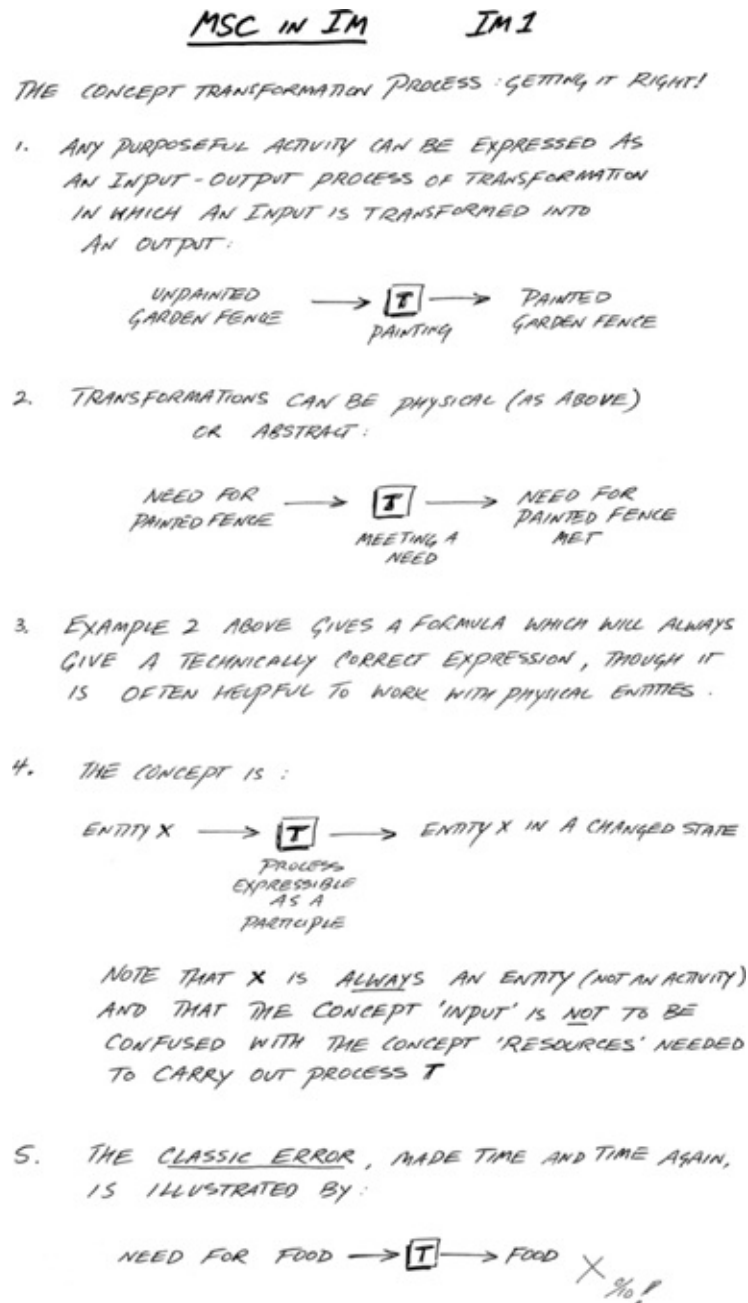


*Figure 5.5*  Guidelines for how to use the concept 'transformation' within soft-systems methodology; T, transformation

Source: Peter Checkland, Notes for MSc in Information Management (IM), University of

Lancaster, used with permission.

Within the cybersystemic tradition, systems concepts, methods, tools and techniques can be used with others from any background, academic or non-academic, to surface and bring into a common conversation their different theories of change, worldviews, models of causality, framing choices and appreciations of power so as to arrive at accommodations of difference that enable some next steps towards improvement in the situation (as understood by those engaged in it). The concept of transformation is central to this praxis, but it has a practical and situated form which is, I would claim, central to building effective TD praxis, and is not an abstract 'hand-waving' form as is claimed in much recent literature on the subject.[10]

## Transdisciplinary praxis: a cybersystemic perspective

In this section I want to exemplify, drawing briefly from my own work, how cybersystemic approaches can be effectively deployed in ways that give rise to TD praxis.

### *Transforming knowing through cybersystemic praxis*

At the time of writing I am involved in an on-going systemic co-inquiry with about forty others concerned with natural resources management (NRM) governance in the state of Victoria, Australia. The experience I draw upon is thus fresh, and it is too early to make any claims to particular outcomes, or successes with any confidence (other than to say those who are participating have committed to the process over the best part of a year and are very positive about their experiences). I am using this case because it exemplifies what can result, in part, from the deployment of a suite of cybersystemic concepts and techniques within a facilitated multi-stakeholder co-inquiry process. The co-inquiry has involved a group from diverse disciplinary and organisational backgrounds engaging in a purposefully designed co-inquiry operating at two levels of concern – one being the experience of persistent failure of NRM governance to function effectively across different jurisdictional levels namely local, regional, state and national, and the other being specific exemplars of what participants consider on-going systemic failure that warrants innovation and change, and which have emerged, for example, from the co-inquiry process into failures in the urban biodiversity domain (see SI1 in Figure 5.6). It is not necessary here to explicate all the factors giving rise to, and operating in, the systemic co-inquiry process (see Ison 2010; Ison and Blackmore 2014 for accounts of systemic inquiry).

The praxis which emerged is in part a response to Checkland's (1976, 127) claim, cited earlier, that 'what we need is not interdisciplinary teams but TD concepts, concepts which [are] applicable in areas which cut across the trenches which mark traditional academic boundaries'. We have deployed TD cybersystemic concepts such as 'systemic co-inquiry', multiple-cause diagramming, activity modelling, systems mapping (Figure 5.6), boundary (Figure 5.6), system description, layered structure (i.e. system and sub-system – Figure 5.6), connectivity, interdependence and transformation (see François 1997).

In our facilitated events we adapted SSM to work with others to build activity/conceptual

models (epistemological devices) as possible means for enacting a transformation in our situations of concern. In SI1 (Figure 5.6) we built a model to enact a notional 'system to invest in pilots to co-design collaborative approaches for government agencies and urban/peri-urban groups active in nurturing nature in order to involve Victorians in connecting with and taking care of nature'. The key transformation of concern here, following the logic depicted in Figure 5.5, is from 'pilots not being invested in' to 'pilots being invested in'. What is important in process terms is that a set of activities has been identified that together have the potential to realise the transformation of concern. Building on this model, a dialogue can be had as to whether these activities currently exist (and whether they are being done well) or whether such activities need to be institutionalised.

**We have been pursuing a set of nested systemic inquiries (operating at two levels)**

Systemic inquiry (SI) - how to do NRM governance in 'joined-up-ways' across time and space?

A meta-inquiry?

Emergent contextual inquiries

SI 1   SI 2   SI 3   SI 4

SI 1 - Planning for diversity, SI 2 - Meaningful measures for all, SI 3 - Transforming the partnership between community and government, SI 4 - Integrating NRM planning across local, regional and State scales
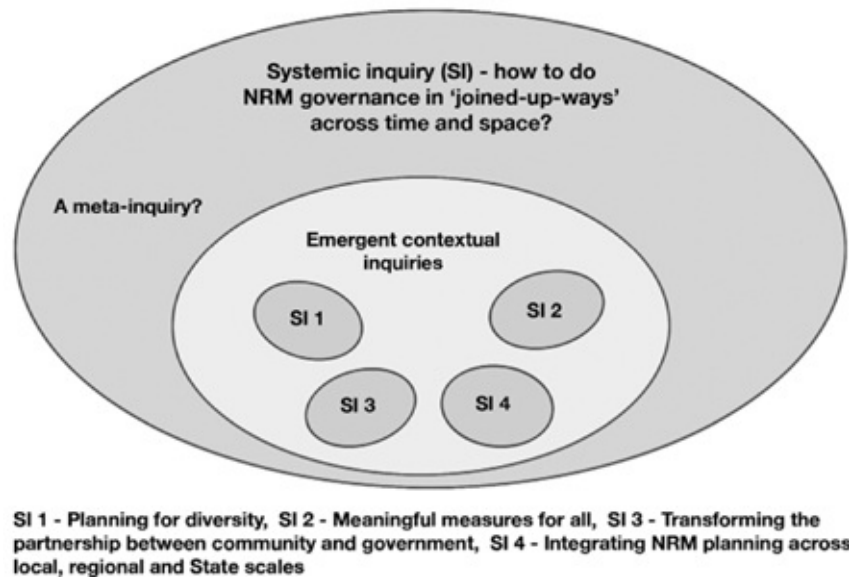
*Figure 5.6*   A key aspect of cybersystemic praxis is the capacity to operate at different systemic levels, including different levels of abstraction; this example is a nested set of systemic co-inquiries – one operating at a meta-level, informed by four component co-inquiries operating in different exemplar issue domains. SI = systemic inquiry

Source: Unpublished research.

In our facilitation we operate with epistemological awareness – recognition that there is no 'real' system we are trying to describe or model, but we remain aware that there are valid experiences and multiple perceptions of a situation, and that by engaging in the act of diagramming, or conceptual/activity model building, different perspectives or appreciations of causality can be articulated, heard and built into a common understanding of a situation of concern expressed systemically. The end of this learning process is a strategy for action that is seen by those involved as systemically desirable. Whether it is culturally feasible is another matter, as it depends very much on who participates, institutional issues and associated power dispositions.

Our praxis differs from Checkland's (1976) admonition in a couple of important ways – we do not claim to be engaged in a process of generating unified knowledge; instead we claim to be engaged in an inquiry process which, following C. West Churchman (1971), is 'reflective learning in the literal sense … it is the thinking about thinking, doubting about doubting, learning about learning, and (hopefully) knowing about knowing' (Churchman 1971, 17). Importantly, models or diagrams that are produced are not 'maps' of the real territory but manifestations of learning and, potentially, heuristic devices to mediate conversations with others – for example policy makers from the state government who were unable to participate in the systemic inquiry despite invitations to do so. As Figure 5.6 shows, we are also researching an alternative means to do NRM governance, our meta-inquiry, through innovations in praxis and institutional form – that is, systemic co-inquiry rather than a project or program.

Some of the most insightful understandings that arise when engaging in cybersystemic praxis are those arising from thinking in terms of levels or layered structures: this concept illuminates an important aspect of cybersystemic practice, the conscious movement between different levels of abstraction which equips practitioners to contribute to transformations in multiple domains – as described in SI 1–4 in Figure 5.6, as well as at the level of the meta-inquiry.

## *Transdisciplinarity as the exploration of difference*

The next example comes from a European project involving a research team of about 30 academics from different disciplines and cultural contexts (Blackmore et al. 2007). This project, which lasted 3.5 years, was carried out in a TD manner, but towards the conclusion a particular dilemma emerged, the dynamics of which are described in Figure 5.7. This figure was used to guide the production of a journal special issue reporting the main research outcomes; in doing this we sought to act with the awareness that each individual and/or group acts out of their own traditions of understanding, from which it follows that understanding is not something that can be fully 'shared'.

Thus Blackmore et al. argue that:

> when a comparison between cases is under consideration (a) control is not possible – ethically and situationally; (b) case control comparisons do not work – these are non-random samples and each is historically and socially situated (as are the researchers), so (c) there is a need for a meta-level process of co-learning which creates an emergent core of common understanding (what we can claim that we have in common) but where the differences are equally valued and articulated.

(Blackmore et al. 2007, 496)

A co-learning methodological approach was adopted by our project – that is, constituent work packages constructed as theoretically and methodologically framed situated case studies were undertaken by all rather than being allocated to particular groups or disciplines. To manage our research a series of common workshops were designed and facilitated and they gave rise to an evolving common heuristic matrix (represented as a simple grid in Figure 5.7) built around the

project's initial design (see Ison et al. 2007). Tensions emerged in the final phases of the project. For example, was it appropriate research practice to attempt a meta-synthesis across all of our case studies to produce a common set of findings or results? As Blackmore et al. (2007, 498) outline:
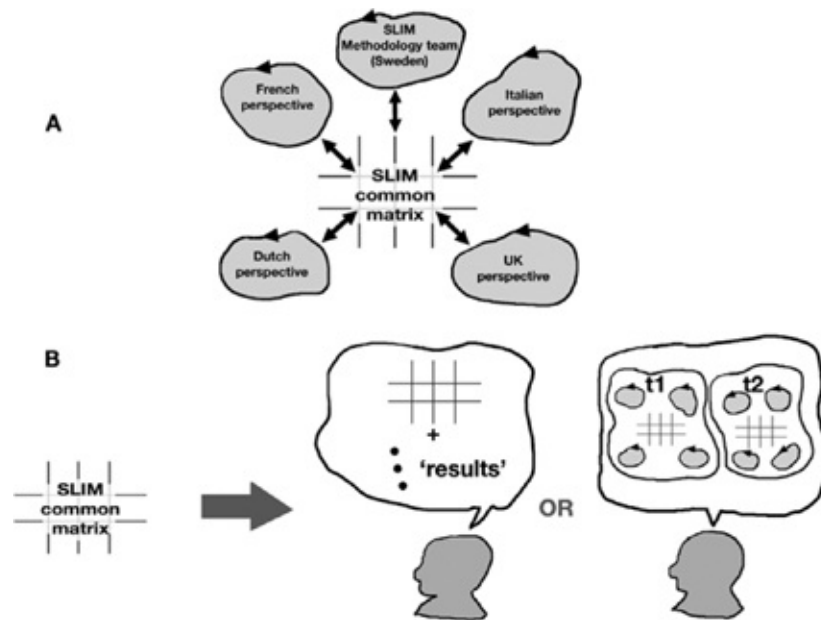


*Figure 5.7* A heuristic used to understand the relationship between research teams (different cultural and disciplinary traditions) which (a) recognises the different histories of each group (closed blobs) and the relationship to a core comparison matrix and (b) the methodological and praxis dilemma of whether to attempt case study comparisons to produce a unified (synthesised) set of results from our common matrix (TD as knowledge production) or to recognise the historicity of cases and researchers, and to value an on-going dialectical process that explores difference as a means to generate differences that make a difference (TD as knowing orchestration); t1 and t2 refer to different times; SLIM was the project acronym

Source: Blackmore et al. 2007.

> In our experience this is what mostly happens in large multi-and interdisciplinary projects, and, often as not, the final synthesis is limited to one or two people. The alternative was to stabilise what was common through our joint inquiry process (the SLIM diagnostic framework described in Steyaert and Jiggins 2007) and to maintain an open and evolving engagement from our different backgrounds – to value our differences and act methodologically to appreciate our differences.

As depicted in Figure 5.7, appreciating difference is a dialectical process and will change over time (see Steyaert and Jiggins 2007). A major implication of our position is that we need methodologies for sense making, not comparison and unifying as if there were a set of objective social 'truths' waiting to be revealed.

Our research offers only a very partial view of what is possible through adopting an

epistemologically aware approach to TD praxis within a cybersystemic tradition or traditions (Figure 5.4). Our lived experience is that engaging in this praxis as participants, designers and facilitators is usually personally and situationally transforming. At the same time our experience is that TD praxis is poorly appreciated as an intellectual field, or misinterpreted, or misapplied (i.e., praxis can be poor, which is of course true of many fields) but most importantly it is poorly institutionalised and attracts too little investment at a time when the demands for transformations towards sustainability (however they are understood) are urgent.

## The question of transformation

In the opening section of this chapter I pointed to two underpinning conceptions associated with 'trans'. One can be understood as the business-as-usual approach that is depicted in Figure 5.3 and captured by the idea that at this historical moment we invest in doing the wrong things righter. In the other conception a re-imagining and re-building of foundations is enacted such that new buildings or edifices emerge. Bate (2000, 258) notes that 'for Heidegger, language is the house of being, it is through language that unconcealment takes place for human beings'. With apologies to Bate, it is by disclosing the *being* of entities in language and bringing reflexivity to our *doings* that we create the possibilities for transformation. But unfortunately, this is not enough. As I have argued elsewhere (Ison 2010) in the context of cybersystemic praxis there are major impediments to building widespread capability. These impediments include:

- lack of epistemological awareness amongst researchers which generates an absence of epistemological and thus, ethical responsibility for the worlds we create;
- pervasive *goal setting and seeking* plus a *targets mentality* that exists in many countries and contexts and which undermines contextual or situated innovation and transformation;
- living in a '*projectified world*' – the project is a pervasive institution which assumes certainty as part of its initial starting conditions; *cybersystemic co-inquiry* is an antidote – because it starts by accepting *uncertainty;*
- '*situation framing*' failure – failure to recognize we have agency in making framing choices about situations, including decisions to bring forth systems in situations as devices for learning and/or transformation;
- living and working with an historical, but continuing, apartheid of the emotions within *research praxis* – that is, there has been a failure to recognize that what we do when we do what we do is more often than not an emotionally driven response/action;
- institutional complexity, institutional lock-in and failure to develop institutions that incorporate cybersystemic design features;
- rhetorical exhortations that perpetuate the dualism of theory and practice, rather than embracing the duality of praxis – I would include much that is written about power and transformation here.

Let me conclude this section by making an important point. It is not cybersystemics that is TD, but the engagement by a practitioner, or group of practitioners, each with their own cultural,

biological and intellectual histories, who in a given context choose to engage with one or more lineages of doing cybersystemics (e.g. the field as characterised in Figure 5.4), and who, through their praxis, realise a set of actions that they, or others, would claim to be TD. We do not need rules or definitions to say what TD practice is, but a rich network of conversation, such as the conversations in this book, to talk into existence and sustain forms of praxis that we would be happy to agree are TD! My preference is to privilege praxis that I experience as *TD knowing* over *TD knowledge production* praxis, while recognising that both are relevant when in the hands of a reflexively aware practitioner. An accompanying need is to constantly inquire into the effectiveness of our own and others' TD praxis in bringing about transformation. Such reflexivity ought not pursue introspective scholarship, but should rather form a basis to innovate, whether to remove constraints, or to create the new praxis forms that our contemporary circumstances warrant.

## Concluding comments

The field of cybersystemic scholarship characterised in Figure 5.4 has many practitioners that engage in what readers of this chapter would recognise as TD practice; they do this by doing their practice with others who are from different epistemological, cultural and disciplinary backgrounds, or they may do it by deploying cybersystemic concepts, methods and techniques that act in the service of others as a meta-language or meta-way of doing. My own praxis, and that of my colleagues, spans both of these possibilities and is thus always TD – hence for us it is not a question of what is or is not transdisciplinarity – it is what we do! But we can only speak for ourselves, and it is a futile exercise to make a claim, for instance that all cybersystemic praxis is TD. A lot is clearly not, in my view. However, any practitioner with experience of the different cybersystemic lineages is well placed to engage in TD cybersystemic praxis, and to deploy the concepts they use to give rise to new ways of knowing and doing (i.e., to transform).

In our doings we regularly move up and down levels of abstraction, inhabiting the duality of the systemic and/or the systematic (Figure 5.2). Put another way, TD praxis will be enriched by those able to act with an awareness of the distinction between *TD knowledge production* and *TD knowing enactment,* and to use these as a duality rather than a dualism. At this moment in history there is a need to invest more in the systemic rather than the systematic, and to treat cybersystemics as both a transdiscipline (i.e. systemic praxis) and/or as a discipline (i.e. adding systematically to the cybersystemic field of inquiry).[11]

## Acknowledgements

# Notes

1 In feedback on this chapter Peter Checkland said 'as a devotee of Karl Popper [KP] I am quite unable to accept an invitation to "play with words". KP had a powerful effect on me when I read: 'Never argue about the meaning of words. If you find yourself doing so accept your opponent's definitions and get on with the argument – which must be about concepts not labels' (pers. comm. 16 February 2016). Whilst appreciating this perspective I have come to understand the theoretical (or conceptual) entailments that come with particular metaphors, and which result from the ways in which words structure our cognition – see Ison et al. 2015. My concern for words is more than a concern for definitional clarity.

2 For example, see the 'Transformations to sustainability' program of Future Earth at http://www.futureearth.org/news/transformations-sustainability (Accessed 17 December 2015)

3 https://en.wikipedia.org/wiki/Trans_fat (Accessed 15 December 2015)

4 Please note that I am using 'transform' here in its everyday sense – as in to change, make better or different

5 I use 'departure point' in the sense of a time or place where lines on a track (as in a track of explanation or argument) part company, or a time when a relationship is severed.

6 For this question I am grateful to Humberto Maturana – I explicate the implications of this question in Ison (2010).

7 Unlike Checkland I would not refer to unifying knowledge, but to orchestrating knowing.

8 I am in agreement with many of the points made by Arora-Jonsson (2016) but not with the way in which the account of the history of the use of cybersystemic ideas is open to misinterpretation beyond the specific context of her concerns.

9 It is unfortunate that Bateson referred to the phenomenon he was concerned with in terms of the language of 'information'; he wrote this at a time when there was semantic confusion about the concept 'information' due to the displacement of conversational explanations of human communications with concepts of 'signal transfer' from physiology (nerve impulses) and electronics. The circuit he refers to is that composed of person, tree, axe and context.

10 Scholarly concern with transformation has grown in recent years; it can be understood as being due to a growing frustration with the lack of change in relation to sustainability, climate change, governance reform etc., and in this regard it is a well-placed concern. However in my view much of the scholarship uses transformation in a very general way and does not deal with a praxis of transformation which has been a historical concern of cybersystemic scholarship. The turn to transformation is also a response to an entailment of the term 'resilience' and concerns that the biophysical focus of resilience loses touch with what has to transform. This has led to initiatives in Future Earth described earlier.

11 Mathematics and statistics can be understood in the same way.

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