

Chapter 4

Extending Our Horizons

Implications for Transdisciplinarity, Democracy, Governance and Ethics

4.1 Assumptions About the World

As the environments which frame universities and the experiences and interests of our graduates change (Beck 2005), we will need to develop social, economic and environmental praxis that recognises and responds to our vulnerability to complex challenges.¹ For this to occur, we need to be able to address sustainability in terms of being, doing, having and interacting.

But before we can work with others, we also need to consider our own values and the process of becoming a sociologist. So turning the lens towards oneself is the first step for critical praxis (Reinharz 1979, 1992).

This section reflects on my role as an educator and researcher. It draws on the German concept of *bildung* (Gadamar 2001; Siljander et al. 2012); in that it acknowledges the ongoing relationship of being a learner and its implications as a facilitator of the learning of others. It is based on self-reflective action learning on being a facilitator of higher degree research. It involves a PAR process (drawing on Freire 1982, 1985, 1987) with professionals and graduate students from diverse backgrounds undertaking research.²

¹ As the problem with media control in any country—is that they could lead to an erosion of democracy per se. It is better to be able to develop critical systemic thinking skills so that one can read through newspapers and are able to locate the different arguments in commentary and editorials that are pro the zero-sum or containerist approaches, pro market and unaware of or denying the interconnections or the impact on wellbeing. The Mail and Guardian newspaper editor stressed that self-regulation is vital for democracy. McDermott, S.K. 2012 ‘Clash of paradigms’ as editors defend self-regulation, Feb 01 2012.

² I am based at a university department that comprises diverse students from Australia and international locations spanning Cambodia, Indonesia, Africa and Palestine. I am also an adjunct professor at the University of Indonesia, a role which involves mentoring higher degree students and engaging with government departments and ministries. The student base comprises postgraduates. We have students doing master’s degrees and doctoral studies from Mauritius, Sri Lanka, Mongolia, Indonesia, Thailand, Philippines, Laos, Vietnam, Canada, New Zealand and many senior public servants and NGO managers from across Australia who study both locally and by distance. Some of our postgraduates also study by distance. I teach postgraduate students within the School of Social and Policy Studies at Flinders University. It spans sociology, social work, politics and

Conceptually, I address rapport, lived experience, tacit knowledge, power, gender, culture, ‘respectful communication’ (Habermas and Derrida 2003; Churchman 1982) and ‘diversity management’ (Flood and Romm 1996). These dimensions have been developed to support the supervision process. The process is of particular relevance to the working with students who have diverse experiences and perceptions. The purpose of this chapter is not to create a pastiche of references on respectful communication and the difficulties of achieving ‘the ideal speech community’ (Habermas 1984), because that path has been well trodden. The book *Making Social Science Matter* by Bent Flyvbjerg has spelt out many of these challenges. Flyvbjerg (2000) has also advocated a pragmatic balance of striving for the ideal, whilst being mindful of the challenges as a result of complex daily challenges and power differences. The purpose of the chapter is to describe my own practical approach to working with participants with very diverse experiences, skills and talents. What follows is not meant to be a recipe for participatory action research (PAR) facilitation. On the contrary, my approach is systemic and contextual, and although I strived for certain ideas, I am open to suggestions and other ways of seeing things. Thus, the process is pragmatic. I stress that I would like to see each participant achieve his or her goals and the goals of the people who have supported them or participated in the research process.

Research facilitation needs to be responsive to diverse needs and complex issues. Complexity refers to many diverse and interrelated variables that are perceived differently by different stakeholders.

My approach is to work with participants quite intensively in the first few months so that they establish their goals. We identify tasks for the next session and agree on what is ‘doable’ in a particular time framework.

The process is based on formal collegiality and clear communication style and documentation of what needs to be done, why and how. The framework, methodology and action (*FMA*; Checkland and Holwell 1998) *model* and a *design of inquiring systems* (DISs; Churchman 1971) are adapted to provide the basis for the PAR process. I explore my own role and the systemic, organic process of being an educator who aims to enable students to address their area of concern and to achieve their goals, namely a PhD thesis.³

public policy. The school takes an interdisciplinary approach to current and emerging issues facing governments and other public bodies internationally. The program’s core curriculum includes topics on public policy, public management, governance, ethics, and research methods. Electives cover a range of specialist areas in public management and administration, including financial, risk, human resource, non-government, organizational and project management; program evaluation; and issues in a range of public policy areas, including culture, the environment, regionalism, cities and housing. Electives can be taken in other graduate programs, including International Development, International Relations, International Business Administration, Environmental Management, Social Administration and Social Work, Asian Governance, Population Studies, Public Health and Educational Administration.

³ The role of educators as members of the Australian government becomes much clearer when one is part of a ‘soft power’ mission to provide scholarships within the region via Australian Development Scholarships and Aus Aid. We need ‘ecology of mind’ in the sense used by Bateson, to see our role when handing out soft koala bears and badges espousing affiliation to organizations.

Being a facilitator involves addressing the tension between supervising in a controlling way and enabling the capability of participants through creative brainstorming sessions that provide the means to unleash the potential of participants through questioning and enabling the participants to question their own ideas by means of a DIS. The DIS was developed by West Churchman and strives to enable people to think about their thinking and to undertake better research. Professor Werner Ulrich was his student who summed up Churchman's ideas in the form of the 12 is/ought questions that need to be asked when addressing an area of concern, in order to ensure that the research is appropriately systemic and responsive to the social, cultural, political, economic and environmental considerations.⁴ I teach by providing some guidelines for developing a design response by working with those who are affected by the area of concern by locating problems within a broader environment. In order to address complex concerns, we need to understand the interrelationships /interconnectedness and interdependency. We apply the tool of multi-dimensional, multi-stakeholder systems and give examples of complex systems. Interconnections are mapped out using FMA model. Critical analysis is based on questioning the boundary and the environment of the problem. This can be explored through critical heuristic questions and participatory processes with the stakeholders. Contextualisation can be explained using mind maps, represented by rich pictures, stories and pictures, historical examples, scenarios and looking at natural history examples. The issue of ethical responses will be central because it will be taught using the DIS approach that enables the participants as adult learners to locate themselves in relation to others and the environment and to consider what is the case and what ought to be the case in terms of the questions spanning what, why, how and so what. Furthermore, the learner is asked to consider the domains of knowing spanning logic, empiricism, idealism, the dialectic (exploring the implications of one thesis, an opposing thesis or antithesis and discussing the potential for some synthesis and the value of honouring space for diversity) and expanded pragmatism, based on considering the 'if then' consequences for others and the environment.

The DIS is just a starting point for a conversation with students, which we use as a basis for mapping out a possible route for the research journey.⁵ In order to

The team spirit associated with shared connections becomes a means to build networks for many purposes.

⁴ I share some of the examples of challenges that help us to realize that our designs need to be ethical. The 12 is/ought questions in the toolkit provide an excellent starting point for thinking about our designs. By asking the questions, what, why, how, so what and in whose interests, we begin to see the issue in terms of the consequences of our decisions for others (including future generations of life), now and in the future. For example, I discuss current issues that are of concern, the collapse of a factory in Bangladesh, because clothing manufacturers strive for profit, rather than considering the social and environmental consequences of their decisions. I also mentioned many other examples that illustrate the way in which cities are poorly designed.

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Interconnections are mapped out using Checkland and Scholes' (1990) FMA model to assist their mapping out of ideas. FMA stands for framework, methodology and area of concern. Critical analysis is based on questioning the boundary and the environment of the problem. This can be explored through critical heuristic questions and participatory processes with the stakeholders. Contextualisation can be explained using mind maps, represented by rich pictures, stories and pictures, historical examples, scenarios and looking at natural history examples. The issue of ethical responses will be central because it will be taught using the DIS approach that enable the students as adult learners to locate themselves in relation to others and the environment and to consider what is the case and what ought to be the case in terms of the questions spanning what, why, how and so what. Furthermore, the participants are asked to consider the domains of knowing spanning logic, empiricism, idealism, the dialectic (exploring the implications of one thesis, an opposing thesis or antithesis and discussing the potential for some synthesis and the value of honouring space for diversity) and expanded pragmatism, based on considering the 'if then' consequences for others and the environment.

Being a facilitator requires thinking about my own role and life and the way to play a positive transformative role in enabling the student to become a successful researcher. The role of educator requires teaching critical heuristics to help participants to think through the implications of their choices (see Jessop 2009) with a range of different stakeholders.

Participatory design by those affected by a problem ensures that the decisions that are made are informed by those who have lived experience of the issues.

In this way, the design of inquiry process allows us to extend our testing process with those who are affected by issues and or have experienced the issues first hand.

Participatory designers become facilitators and they set up communities of practice to enable them to make better decisions.

We need to enable people to become the agents of design and social change—rather than at the receiving end of interventions. Donna Haraway stresses the importance of embracing the opportunities for design, so that we can be the architects of

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our own futures, rather than the objects of design. Critical systemic praxis aims to empower those who are affected by enabling them to become designers and agents for social transformation. Technology is a design response. This is important to remember as our design responses for the next decade will be particularly relevant when planning for a sustainable future.

4.2 Power and Empowerment: Collaborative Praxis for Teaching, Learning and Leadership

If universities are to develop new generations of researchers and policymakers able to view problems systemically and apply systems methods to their resolution, then there is a clear need to develop capability and capacity in cross-disciplinary research (Banathy 1999) and the implications for higher education. Facilitation is both a process and an outcome. As a research facilitator, I respond to the increasing diversity of graduate students and to the increasing complexity faced by graduates and universities by setting up a community of practice spanning the participating departments and beyond. This approach supports distributed approaches to facilitation, or leadership from behind (Ramsden 1994; Harris 2004; Spillane et al. 2004), which characterize the Australian university sector. In this sector, leadership occurs via complex processes of sectional interactions which require working across professional and organizational boundaries. Development is envisaged as engaging in action learning with postgraduate students and fostering two-way learning on supervisory relationships when undertaking research. PhD students engage in extending their academic knowledge whilst actively undertaking a systemic action learning process. As educators, we have to deal with three options pertaining to truth (McIntyre-Mills 2000; Crowder 2003): (a) one truth response defended by grand narratives or conflict, (b) no truth (postmodernist) approach defended by relativism and (c) mediated (harmonized) responses based on stewardship.

The case for social change is made through exploring interdisciplinary frameworks to address greed, the commodification of the powerless and the environment. It is informed by debates on ethics, human reasoning capability, emotions and environmental politics and the practical implications for social democracy (Judt 2010).

In addressing an area of concern, the ability to design research that is interdisciplinary is becoming increasingly important. The research and teaching approach:

1. *Strives to enable* ‘evolutionary development’, rather than ‘development for growth’. It addresses the difference between (a) *development for growth* which is unsustainable, because it ‘forgets’ the ‘externalities of poverty’ and pollution and (b) *evolution that is based on responding to the environment*, adapting (Giddens 2009) and evolving designs that are socially, economically and environmentally sustainable.
2. *Discusses research on representation, accountability and sustainability* based on caretaking for this generation and the next as well as testing out ideas with

those who are to be affected by the decision-making process. This is based on the principle of subsidiarity and the Ashby's rule/principle (1956) drawn from socio-cybernetics.

3. Reflects on the relevance of participation for science, democracy and governance.
4. *Explores the idea* that participation in and of itself enables/enhances connections and a sense of wellbeing. It is the subject of ongoing testing in a range of research contexts, because we believe it will make a difference to complex environmental challenges.
5. *Makes a plea for exercising* greater mindfulness (based on larger assemblies of ideas) and the better match of development responses to context. Climate change and poverty are examples of 'wicked' problems, to use Rittel and Webber's (1984) concept, in that we have to address many diverse variables that are interrelated and that have a strong value and emotional dimension. People are prepared to make an effort to become engaged in respectful discussions (Habermas 1984) pertaining to essential concerns, in order to test out ideas together, in order to reach robust conclusions. Achieving quality of life through health, housing, education and employment within livable cities are dimensions of a complex, interrelated social justice and wellbeing challenge posed by climate change (Stern 2007; Flannery 2005). These are the sine qua non of wellbeing.

4.2.1 A Systemic Approach to Education and Research

Commodification and corporatisation is a problem. Lack of participation by staff and researchers is the thin end of the wedge.

But there is a broader question here, which is to do with the increasing dominance of a sort of commercialised, technocratic culture in which cyber relations are increasingly privileged over direct human contact.... Universities are creating similar cultures of distancing.... Being on campus in the company of others (rather than in one's cyber cell) should, where possible, be a vital part of university experience (Hil 2013, 28).

Education that is reliant on corporatist approaches to student numbers, and ticking off performance measures, will be keen to make on-line learning a norm. But the creative engagement of being part of a vibrant tertiary experience is no replacement for face-to-face learning. It can provide some additional advantages for students who are learning in a second language. It also provides opportunities for review or a means to catch up if students have been ill or doing part-time work. But the transformative experiences of being part of a learning environment and face-to-face learning community are important. The challenge of learning to engage with different options in real time is part of the learning process. When people do not have to develop the emotional intelligence to grapple with difference and sit in their cyber cocoons, they can become less able to respond to the complexities of interpersonal, intersubjective dialogue.

What is the difference between cross-, trans-, inter- and multidisciplinary approaches, and why does it matter to higher education? Cross-disciplinarity refers to acknowledging the existence boundaries between disciplines, the history and philosophy of knowledge and debates within disciplines, whereas multidisciplinary acknowledges that more than one discipline provides a resource for addressing an area of concern, and that by working across, rather than within bounded disciplines, it is possible to cross-fertilize ideas and perhaps develop new knowledge at the boundaries and overlaps of disciplines. This approach is vital for extending knowledge and addressing complex issues of concern. The ability to come up with new ideas is not going to come necessarily only from the centre of a disciplinary specialization.⁶ It will also flow from an ability to work with and across conceptual discourses. For this reason, it is vital to develop an ability to work across boundaries and to re-frame the limits of a discipline by extending it.

The ability to engage in respectful dialogue and to work across different world views and with diverse personality types becomes pivotal. Social justice cannot be addressed through splintered engagement.

A multidisciplinary approach may lean towards re-working boundaries to establish transdisciplinary responses, which in turn develop new kinds of knowledge (as a result of the creative engagement with colleagues who are prepared to work respectfully with one another). I have found that through working in multidisciplinary teams to address socio-economic and environmental justice issues⁷ the ability to communicate and to build rapport and enthusiasm is the most important factor.

The need to develop transdisciplinarity within and across education, the public, private and volunteer sectors is vital.

Departments comprising many disciplines, who may or may not work together with varying degrees of integration to achieve systemic responses, need to honour diversity, but without lapsing into oversimplification or uniformity. Homogenizing is one of the worst outcomes for transdisciplinarity.

Thus, awareness of boundaries remains a focus for the sensitive two-way learner—who may be student, teacher and researcher from moment to moment. Brilliant insights may enable students and teachers to learn from each other to find their path once more.

We are designers of a range of options. The choices we have made as a result are problematic—largely because we have not understood the fluid interconnectedness of space, time and matter. The thinkers located within a school, university, community will shape the regional environment today and in the future.

To foster research capability, the following considerations need to be addressed:

⁶ We need to understand the history of the social and natural sciences sufficiently to be able to see that mind–body and environment are systemically linked—not hermetically sealed compartments. The divides across the social sciences are associated with enlightenment approaches traced to the interpretation of Descartes statement: ‘I think therefore I am’. Sciences could have acknowledged human beings are part of their environment.

⁷ Spanning gender relationships, political dynamics, policy on mental health, employment, water and sanitation-related disease, social conflict, homelessness, public education and capacity building on climate change and poverty-related diseases.

- Issues facing the world are complex, because they straddle many different factors and involve diverse stakeholders. They will learn about contextualisation, by placing areas of concern within a context.
- Interconnections are important to understand how different disciplines are related to the whole.
- Understand that poverty and climate change are the result of interconnected social, economic and environmental challenges.
- Root causes are based on learning to address the underlying causes rather than the symptoms of a problem.
- Feedback is based on learning to identify positive and negative feedback across components of a system.
- Paradoxes are portals for addressing problems that appear to be intractable by applying systemic theory and practice.
- Constantly changing systems need to be understood as a core concept that needs to be addressed by applying conceptual tools.

Some of these tools will be mentioned in order to illustrate how they are used to facilitate discussion that enable participants to think systemically in terms of assumptions, values, theory and methodology as it pertains to the process of governance. The toolbox has been discussed elsewhere. It contains many conceptual tools that can be used in combination and adapted to suit the context (see McIntyre 2004).

It is important to know when, why and how to use them in combination as one tool is often insufficient for the purpose. Context and sensitivity to many issues determine the way they are used. The challenge is to strive for holism and avoid fragmentation. We need to consider the apple of holism and the slice of reductionism. An apple can have a worm in it or a bruise on it. If I take a small slice out of it, without looking carefully at the whole apple, I can take a slice that is crisp and crunchy, or if I am careful, I can try to take a slice or slices that show the bruise, the worm and the crisp crunchy parts. The aim is for us to learn how to use the above tools to enable our critical thinking when undertaking research design, data collection and analysis, policy and management decisions. The first tools are easy to use, and they provide the basis for unlocking the door to critical and systemic thinking. At first, the ideas can be daunting, but the use of examples makes the action learning process easier. A glossary of the key words is provided with the toolkit. I encourage participants to add to the glossary and keep notes on the terms that they find challenging. This is a useful means to promote action learning with the group. The reason why I have used this conceptual tool is because it introduces emotion into a discussion on thinking about thinking. Good governance is dependent on being mindful of many considerations.

4.2.2 Praxis and Phronesis

The first task is to ask a number of questions, such as:

- Why do you want to do this research?
- What kind of difference do you hope to achieve?
- How will you make a difference to the world?
- Do you wish to contribute to theoretical understanding or to ways in which to know the world, so that particular voices can be heard more effectively?

The community of practice at Flinders University has been built up around ‘work in progress’ sessions for graduates. The work-in-progress approach to thesis supervision is based on a critical systemic thinking and practice (McIntyre 2004). The toolkit is a resource to explore policy and management problem solving.

Developing familiarity with these tools and the patterns of thinking behind them inspires and empower students to explore complex ‘real world’ issues of importance to them. The approach encourages students to adopt creative research designs and rigorous analysis appropriate to their research problems and contexts. I engage in conversations with students who are asked to map out their theses using an adapted version of Checkland and Scholes’ (1990) FMA model which me to brainstorm ways to address an area of concern with the student. They are asked to consider the theoretical framework, the methodology and the area of concern to explain the way in which she works with students to address representation, accountability and sustainability. I focus on the importance of testing out ideas with students and with those who are to be at the receiving end of policy and governance decisions. User-centred design is based on matching services to users’ perceptions on what works, why and how.

My teaching philosophy based on action learning and a systemic approach to communication that aims to draw out the potential of students through respectful communication, building a trusting relationship⁸ and developing their conceptual design and critical thinking skills. This is enabled through welcoming the students into the academic community as contributors to academic journals, seminars and conferences and explain that just as we have been mentored by academics who have passed the baton of participatory, creative design for critical thinking and practice to me, we pass it on to them by developing opportunities for them to develop their ideas in a conversational, learning space which is based on trust (Metcalf and Game 2006).

⁸ According to Wheatley (2009, p. 30): “Even among friends, starting a conversation can take courage. But conversation also gives us courage.... As we learn from each other’s experiences and interpretations; we see the issue in richer detail. We understand more of the dynamics that have created it. With this clarity we know what actions to take and where we might also have influence. [w]hat gets lost when we stop talking to each other? Paulo Freire ... said ... we ‘cannot be truly human apart from communication...to impede communication is to reduce people to the status of things’.

Without imaginative courage we are likely to be left with public cynicism and despair before the very large challenges that these three areas pose. But with some new pictures of what may be possible we can at least approach these frontiers and think creatively about what justice can be in a world that is so much more complicated, and interdependent, than philosophical theory has often acknowledged’. (Nussbaum, 2006, p. 409)

I stress to early career fellow researchers that their journey is made by the way in which they address both success and failure and that they need to sustain their emotional energy through supportive networks that are respectful of transdisciplinary approaches despite the challenges.⁹ The transdisciplinary approach is gaining recognition in many of the university environments that I have visited. For example, the *École Normale Supérieure* stresses links across the social and natural sciences as a requirement in research as do many research institutes such as the Schumacher Institute. The interdisciplinary area is difficult to find funding for from the Australian Research Council—albeit not impossible, but it does require resilience based on a belief in what one is doing.

This approach to teaching, learning and leadership addresses the dualisms that underpin our thinking and practice. Intersubjectivity requires an appreciation of our place in an interconnected universe (Turner and Whitehead 2008). As stewards, we need to ensure that we uphold freedom and diversity to the extent that we do not undermine the freedom and diversity of the next generation of life. This non-dualistic integrated or systemic approach requires a different approach to science, teaching ethics, democracy and governance. Our thinking and practice have been influenced by Indigenous thinking and, in parallel, the influence of socio-cultural studies along with a more recent discovery of West Churchman (1979, 1982) who was concerned about drawing and re-drawing boundaries, in order to make better social and environmental justice decisions.

My education approach to reflection, problem posing and social justice is an ‘I thou’ approach to collaboration.

The capacity to work in a systemic manner that integrates thinking and practice is central to the ability of graduate students to complete research on apparently intractable challenges.

Distributed leadership processes help to develop the capability to think creatively, critically and systemically. In April 2010, the annual International Federation for Systems Research met at the University of Vienna and continued at the Pernegg Monastery. The conversational approach to design originated as a result of Bela

⁹ We come now to the micro-mechanisms by which a small number of individuals make themselves the elite, while others who start out with similar ambitions and opportunities drop by the wayside. The creative elite builds up emotional energy specific to a particular branch of the intellectual field—philosophers, mathematicians, sociologists ... whatever constitutes itself as a self-enclosed attention space. Within this space, there is competition over a small number of niches, positions that can receive recognition. Emotional energy in its general form is the sense of enthusiasm, confidence and initiative, in the case of abstract verbal intellectuals they work with ideas that feel successful.... In terms of the model of thinking, I have described in Collins (2004, Chap. 5), these intellectuals are engaged in internal interaction rituals, loops of emotional self-entrainment that give them both confidence in what they are doing and a sense of their competitors and supporters.... Practitioners of such techniques find themselves in a cocoon of self-confidence that Chambliss calls the ‘mundanity of excellence’, a cool attitude that opponents mystify to their own detriment. Small marginal differences in performance become magnified as winners become further energized, while losers become de-energized.... The emotional energy of the intellectual elite is continuously being rebuilt by a positive spiral... (Collins 2008, p. 456–457).

Banathy (1996), who asked that conversationalists remember the next generation, by placing a chair in the middle of the circle to remind us that we are global stewards¹⁰ who need to think about our thinking and our practice and the implications for future generations. ‘Consciousness is, in effect, the key to a life examined, for better and for worse...consciousness helps us develop a concern for other selves and improve the art of life.’ (Damasio 1999, 5)

...the relationship between the people and their country is understood to have existed from time immemorial to be part of the land itself’. (Rose 1996, p. 35–36 cited in Atkinson 2002, p. 29)

4.2.3 *Research Design and Mapping*

1. What is the area of concern?
2. Why is the area chosen?
3. What are the methods?
4. How and why are they appropriate to the area of concern?
5. In whose opinion is the research useful?

A contextual questioning process that helps us realize that a shopping list of methods and theories is useless unless we can apply them. It is adapted from Checkland and Holwell (1998, p. 13).

Everything we read needs to be directed to areas of concern for our research and that we learn best when we apply ourselves to addressing specific tasks and when we are open to the ideas from other people.

The five compartments of the toolbox adapted with thanks and apologies to West Churchman (1982) and Wadsworth (2001, p. 420–432):

¹⁰ The 28 delegates invited to participate were asked to contribute to a conversation. The invitation appealed to me as an opportunity to address the challenge of reframing national citizenship as global citizenship to address social and environmental challenges within regional biospheres. One of the leaders of our group is sponsored by UNESCO to foster a regional biosphere approach. The conversational approach enables those working towards this agenda to pool their resources. The process of conversation required that we introduce ourselves within our subgroups. We met in a chamber named for a nun, ‘Rosalia’. The participants in our subgroup spanned a range of academic disciplines (besides our shared contribution to systems thinking or systemic praxis). The disciplines from which we originated included mathematics, engineering, horticulture, environmental studies, development studies sociology, anthropology and fine art. The age of the participants ranged from 60s to 30s and spanned Iranian, Australian, English, American, Austrian and South African, South American and Japanese cultural heritages. Of the 28 delegates, only six were women, which is indicative of the way in which formal systems science is perceived. Nevertheless, a wide range of fields, including women’s studies and sociology/cultural studies and disciplines concerned about knowledge management and social justice, has contributed greatly to a systemic approach. Children’s issues were represented, and it would be worthwhile to ensure diversity in conversations about future generations.

The mirror for reflecting on one's own life, values and emotions that can be seen as the enemies within, namely: "religion, morality, politics and aesthetics", to cite West Churchman.

Telescope for mapping the big picture, overview, generalizations based on gender statistics of life chances (level of education, literacy and numeracy levels, employment types, unemployment, infant mortality rates, types of illnesses, for example). *Big picture (telescopic/nomothetic)* views are based on methods such as questionnaires that can gather the same data from a statistically representative sample.

Magnifying glass for giving in-depth, detailed maps of perceptions by means of stories that describe feelings to help us understand and interpret what these life chances mean to both men and women. *In-depth (microscopic/ideographic)* views are based on methods such as (a) observation and participant observation, (b) research conversation, (c) group work and (d) Delphi technique which involves meeting groups separately and sharing the ideas generated by each group with the others to find ways to work better together.

Compass for working within existing structures of society that concentrate on mapping the labour of men and women of all ages so that practical (or basic) needs of women to be able to access resources.

Computer for bringing about change, including structural change, that addresses the strategic needs of women to have more control over their lives and examines why they are in their current circumstances. *Strategic connections can be used to bring about change through understanding policy, empowerment and understanding social relations and power.*

Good decision making is based on being as conscious of ourselves, others and the environment as possible. It is about being mindful that we are human beings made up of body, mind and brain. We operate within a context and it is the context in interaction with our thinking, emotions and behaviour that constructs us. (Greenfield 2000).¹¹

A different kind of democracy and a different kind of identity is required. We need to develop a wider sense of responsibility—accountability and representation are quite inadequate today. Ironically, Nye (2012) does not realize this when he stresses that the soft power to attract support for state power requires less talking and more diplomatic listening to narratives that portray *how others see the world*.

Whilst I agree that the capability to develop shared concerns is developed through narrative, it is debatable about how USA is perceived by diverse interest groups.

¹¹ It is the context and the meanings we construct that make us who we are. This is our personality. Life is a continuum from inorganic matter to organic matter. Consciousness is also part of that continuum, according to Greenfield (2000, p. 21–22): 'you cannot understand consciousness without understanding emotion, and that consciousness is not purely rational or cognitive as some, particularly those working in artificial, computational systems, have implied ... the more we are feeling emotional, the less we are accessing our individual minds, the less we are being ourselves; ultimately we have let ourselves go...'

Our perception of the horizon is often only an artifact of where we are located in the scheme of things, according to the astrophysicist de Grasse.¹² How can we extend our horizon of solidarity? The horizon always seems as a perfect circle centered on the viewer. But other viewers in other places will have different horizons.¹³ Banathy also stressed this in his book on conscious design for evolution. Imagine if we could enhance our capability to think and practice by extending our vision?

Interacting with others can be assisted by means of enhancing crowd sourcing¹⁴ through more sophisticated means of engagement so as to ensure that the complexity of the decision is matched by the complexity of the decision makers, as detailed above.

But this extension of vision needs to begin and end with self-reflection. The Max Neef human sustainability index of being, doing, having and interacting needs to focus on striving for self-knowledge, to recognize the so-called enemies within', namely our values and how they shape our lives.

¹² De Grasse explains that we need to see horizons as always changing. The limits are beyond us and always relative. We do not know how big the universe is. In fact, it may be expanding. Parts of it may be contracting. <http://www.youtube.com/watch?v=9RExQFzZHxQ&feature=related>.

¹³ We are human animals and have both rights and responsibility to the voiceless as caretakers and advocates. The emphasis on anthropocentrism could be said to be killing us, because we cannot see that in modifying the food chain, using pesticides widely has affected the bee population (Mathews 2010) which affects food production and killing top predators leads to the proliferation of other species that can place pressure on the ecology which leads to further degradation of the land on which we depend for food. This is arguably unravelling the fabric of the planet. Just as the telescope helped us to see in the distance and the microscope helped us see in detail that which was beyond our comprehension with the naked eye—the use of external digital software could enable us to hold in mind many variables and to find agreed pathways towards a sustainable future. According to De Grasse, it is thought that the universe is 14 billion light years. The light from 15 billion years ago has not yet reached us. We are unaware of it. We do not know if the entire universe is finite or not. This is just one example of our lack of understanding—limited to our intelligence at the moment. Human beings cannot fly and they cannot smell as well as many animals. But the microscope has helped them to see in depth and the telescope has extended their vision. But this is not enough. We all evolved on the plains of Africa to escape lions. Brains were shaped by natural selection. Those who collaborated and competed survived. The ability to think in terms of the big picture and the long term and to support those beyond our immediate family needs to be developed. We need to understand that the zero-sum—or 'us them' is not the answer to survival. Meat is no longer killed and shared just with the immediate kin and those with whom we want an alliance. Now we may need to think in terms of how to support large numbers of people in cities. According to De Grasse, as we develop tools, so we evolve to the next level.

¹⁴ See for an example of working with stakeholders within one space at a particular time.

http://en.wikipedia.org/wiki/File:Editing_Hoxne_Hoard_at_the_British_Museum.jpg.