The Emergence of the Collective Mind

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Pattern

Context: With the emergence of human responsibility for a human-dominated planet that marks the era of the Anthropocene, there is a resulting need to extend human understanding of uncertainty and complexity and harness the full capacity of the collective mind.

Issues: Collision courses among the compartmentalized constructions of knowledge inherited from the scientific Enlightenment impede the whole-of-knowledge reach of the collective mind.

Resolution: Collective learning reframes opposites as relationships and extends empirical inquiries into asking the full suite of physical, social, ethical, aesthetic, interpersonal, personal and reflective questions.

Examples: steps in individual and group collective thinking.

Context: The Anthropocene and the Collective Mind

Changes in the construction of knowledge are a regular feature of the human condition (Clark 1971). The 2 million year history of human impact on the planet has been traditionally been described through the human creative use of resources, such as the Stone Age, Bronze Age and Iron Age.[1] The theme of this chapter, the emergence of a collective mind, is a sufficiently significant step forward in the human creative use of social and physical resources to be representative of the present era of the

[1] See http://en.wikipedia.org/wiki/Prehistory [accessed 26.3.14].

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Anthropocene. The Anthropocene is the label being given to this time in human history when the entire planet is being affected by the power and range of Anthropos, human actions spurred by human ideas (Steffen et al. 2011). This is not to say that humans are in control of the future. Far from it. The future holds an uncertain outcome as a result of the transformative effects of human interaction with the rest of the living and non-living systems of the planet.

In the twenty-first century, transformational changes in thinking are being generated by global flows of information, finance, resources, and people, bringing together diverse ideas (Falk 1999). The Anthropocene itself is the latest stage in a series of modes of governance. In Western societies, these were the Greek and then the Roman Empires, the Middle Ages, the Renaissance and most recently the scientific Enlightenment. Each era has developed its own basis for the construction of knowledge (Clark 1971). These can be loosely recognized as humanist, administrative, god-given, creative and empirical justifications for evidence. The most recent, the empirical justification applied during the scientific Enlightenment, is losing its long dominance due to its inability to provide adequate answers to the questions raised by the transformational changes taking place around the world (Brown and Harris 2014).

Global changes are generating issues of food security, urbanization, global warming, and spot-fire wars, often described as 'wicked problems' (Rittel and Webber 1973). These are problems that are wickedly difficult to resolve because they are an inherent part of the society that seeks to resolve them (Brown et al. 2010). Since their resolution requires changes in an already-changing human society and the living and non-living systems that contain them, the resolution of wicked problems goes beyond the reach of the formal academic disciplines created during the Enlightenment. Any such resolution will need to go even further and embrace all the human ways of knowing. Every human being has access to the personal, physical, social, ethical, aesthetic and interpersonal forms of understanding, combining that understanding in answers to the reflective question "What does it all mean?"

Recognition of a collective mode of construction of knowledge that does embrace all these ways of knowing is gathering pace. In the 1950s mammalian archeologist Pierre Teilhard de Chardin predicted that the next step in the evolution of the human mind would be a collective mind, a mind of minds, with all minds informing each other, without borders or barriers (Teilhard de Chardin 1955/1975, 1966). It is essential here not to confuse a collective mind with a mass mind that thinks as a single whole. Each collective mind gains strength from being free to develop to its own greatest extent as well as contributing to a richer whole.

During the 1970s, a host of ideas emerged for incorporating paths to the construction of knowledge drawn from beyond the academic disciplines. Pathfinders such as Thomas Kuhn, Silvio Funtowicz, Jerome Ravetz and Gregory Bateson questioned the dominance of empirical science, not only within the disciplines, but as a prototype for all knowledge (Kuhn 1962/1970; Funtowicz and Ravetz 1993; Bateson 1973, 1979). This capacity for a collective mind was being developed long before the arrival of a practical linking mechanism, the Internet in the 1980s. A second wave of fresh thinking appeared at the turn of this century. Helga Nowotny opening up the

idea of an open construction of knowledge (Nowotny and Plaice 1994; Gibbons et al. 1994), while Julie Thompson Klein and Christian Pohlin in this volume linked the academic disciplines to the new direction (Klein 1996, 2010). For this second wave, there was digital technology extending the face-to-face human communication of these new ideas into a global electronic web. For those wishing to scope this emerging knowledge landscapes, there is now almost a double literature: on the one hand following classical science and on the other pursuing the new knowledge landscape being laid out by collective minds.

Issue: The Academic Disciplines and the Collective Mind

Disciplines in general continue to follow the framework developed during the scientific Enlightenment, seeking to reduce complexity and rely on objective observations, while training their apprentices in the same mode. However, this approach separates an issue from its changing social and physical context and privileges academic thinking over personal, community, creative and ethical experience. During the last part of the twentieth century, there were increasing efforts to find ways for the academic disciplines to combine in order to better understand rapidly changing and interconnected events (Brown et al. 2010). At first, the focus remained within the disciplinary domains in inter- and multi-disciplinary inquiry. Then the move to transdisciplinarity went further, maintaining the importance of the academic disciplines while accepting forms of knowledge from outside the disciplines.

This shift in thinking began when Thomas Kuhn differentiated between normal standardised empirical science and open-ended revolutionary science (Kuhn 1962/1970). Recognizing the need for creative thinking and an open approach to knowledge in revolutionary science, Funtowicz and Ravetz developed a widely applied Post-Normal Science (Ravetz 1999, 2005). Post Normal Science accepted that revolutionary science had become normal under conditions where, as they said, facts are uncertain, values in dispute, stakes high and decisions urgent. Their proposition was that revolutionary conditions had become normal in times of transformational change and so revolutionary science with its open-endedness and imagination had become the new normal science. Other initiatives which carry revolutionary thinking into mainstream practice have been spreading rapidly. Educational institutions at all levels have increasingly included applied and integrated courses. Popular writing has introduced the theoretical ideas of the social and physical sciences into every-day knowledge and vice versa. Science fiction in text and film is another avenue for expanding the public knowledge base through connecting the physical, the social and the creative.

Increasingly, frameworks for a collective mind have become vehicles for moving to realize the full scope of human potential. Helga Nowotny and colleagues extended transdisciplinarity to include the idea of type 2 knowledge with six characteristics. Their new construction of knowledge is grounded in experience, welcomes diversity, goes beyond the disciplines, and is transgressive in that it violates traditional rules

(Nowotny et al. 2001). It is also accountable and rigorous in its tests for validity. Building on the same foundation, versions of the individual collective mind have emerged in multiple fields. Case studies of an unbounded mind that is both transgressive and goes beyond disciplines demonstrate inventiveness in the business world (Mitroff and Linstone 1993). A pragmatic and democratic mind is able to draw on learning from the whole of human experience (Ansell 2011). A participatory mind is totally immersed in the complex world of human relationships (Skolimowski 1994).

For minds linked to other minds in groups of any size, a range of authors have suggested dynamic frameworks that can harness the diversity in a collective mind, and join together parts and wholes. Bateson's *ecology of mind* draws on the interconnected rhythms of natural systems (Bateson 1973, 1979). Alexander's *pattern language* incorporates the inherent energy of all life-giving systems when they can be captured in participatory planning and design (Alexander et al. 1977). The present authors' proposition for a *transformation science* extends the normal science of the Enlightenment to address the conditions of the Anthropocene (Brown and Harris 2014).[2]

The strong currents towards both individual and group collective thinking confirm Pierre Teilhard de Chardin's prophecy of collective thinking as the next step in human evolution (Teilhard de Chardin 1955/1975).[3] The Ostroms, Elinor and Vincent, restructure natural resource management as governance of collective common pool resources (Ostrom 1990) and Elinor gains a Nobel Prize.[4] The Mindells, Arnold and Amy, rethink democracy as each individual's collective thinking joining together, leading to a deeper democracy (Mindell 1992, 2002). Christopher Alexander gives us a pattern language which leads to revolutionary collective thinking in town planning, engineering design and the software design for social media (Alexander et al. 1977). The boundaries erected within cultures, genders, ages and capacities are becoming permeable. The world is entering a new era of thought. Whether it survives as the mainstream, or is blocked by compartmentalized thinking, or generates yet another dimension of thought is as yet unknown.

This wave of new thinking about how we can best think should be no surprise. The human mind has access to the capacities of introspection and reflection, and of physical, social, ethical, aesthetic, and sympathetic interpretations of the world as its birthright (Brown and Harris 2014). The practice of collective thinking is available to everyone, and access to collective learning is already part of lifelong formal and informal education, at least to some degree (Brown and Lambert 2013). Nor is the idea of a collective mind with an innate capacity for collective thinking a new idea. Following on from the time of the Renaissance, mathematician Rene Descartes, known as the father of the Enlightenment, wrote (Descartes 1637/1946, p. iv):

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[2] Chapter 8. Transformation science: A science of change.

[3] Teilhard de Chardin predicted a new phase of human evolution, the noosphere, literally a sphere of thought that surrounds the globe.

[4] See http://en.wikipedia.org/wiki/Elinor_Ostrom [accessed 27.3.14].

> the diversity of our opinions does not arise from some being endowed with a greater share of reason than others. . . To be possessed of a vigorous mind is not enough; the prime requisite is rightly to apply it. (Rene Descartes 1647)

And in another message from the seventeenth century:

> No man is an island,
> entire of itself,
> . . . Any man's death diminishes me,
> because I am involved in mankind,
> And therefore never send to know for whom the bell tolls;
> It tolls for thee. (John Donne 1607)[5]

And more recently:

> I am large. I contain multitudes . . . .
> Missing me in one place, search in another,
> I stop somewhere waiting for you. (Walt Whitman 1986) [6]

The collective mind moves beyond the individual to the community, national and international scene. Pressures have been rising for political agreements to be formulated through collective rather than polarised thinking. National centres for dialogue in Sweden, Canada and Australia have been purpose-built for round-table negotiations rather than as theatres for formal debates. Major global dilemmas are being addressed through international think tanks rather than established structures, as for example the annual *Davos World Economic Forum*, the *Global Social Forum*andthe *Copenhagen Climate Change Convention*. Global social movements based on collective thinking at the local scale are making a difference through programs such as *Transition Towns, Healthy Cities* and *Common Ground.*[7]

The one direct action program endorsed by the inaugural United Nations Conference on Environment and Development in Rio de Janeiro in 1992 called for a collective mind. The program was Local Agenda 21. The aim was specified as "*shared governance for a given locality which incorporates the goals of all stakeholders in that community, and balances social, economic and environmental resources*" an aim requiring the application of a collective mind, individually and as a group (Local Agenda 21, Chap. 28, 1992).[8] Over the two decades 1992–2012 the Local Sustainability Project based at the Australian National University, Canberra, worked towards the aims of Local Agenda 21 with over 300 collective action projects in seven countries (Brown and Lambert 2013).

This experience of conducting the Local Sustainability Project in partnership with local communities produced a collective learning framework, four reframed paradoxes and a set of seven questions which together were found to encapsulate the workings of a collective mind (Brown and Harris 2014). An early insight was that

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[5] John Donne, Devotions upon Emergent Occasions, Meditation 17, 1624.
[6] Walt Whitman, *Song of Myself*, 1855, p. 14.
[7] Web search engines have comprehensive accounts of each of these significant examples given in this paragraph of the collective mind at work.
[8] See http://en.wikipedia.org/wiki/Earth_Summit [accessed 25.3.14].

taking part in any significant transformational change involved two separate learning spirals: collective learning within *individuals* and collective learning among a *group*. Collective learning in each case tapped into the human capacity to combine all ways of knowing: the intra-personal, the physical, the social, the ethical, the aesthetic, the inter-personal and the reflective. The two applications of collective thinking, individual and group, are described in practice in the examples below.

A second insight was the recognition of the need to welcome paradox, examples of two things that cannot both be true, rather than to try to resolve them. A paradox proved to be a signal that here was a potential catalyst for change. The Local Sustainability Project found that moving a paradox from its basis in opposing positions to a dynamic relationship facilitated transformational change. For instance, there is conflict between advocates of early prevention and post hoc treatment for the impacts of climate change, when it would seem sensible for them to pool their skills to pursue both.

This renegotiation from opposites to relationships was particularly effective for exploring some of the basic issues of the Anthropocene. Parts and wholes, stability and change, individuals and society, and rational and creative thinking are routinely represented as separate entities, often in opposition to one another. Gregory Bateson[9] points out that such division can lead to a schizophrenic understanding of each of those dimensions (Bateson 1958, 1973). Such divisions make trying to service both components a disruptive double bind, unless there was some bridging position.

Take the concept of gender for instance. Bateson described the ways in which the more polarised the gender relations, the more a community develops formal ways of negotiating relationships between male and female, from marriage to parenting. Where a third more tolerant position exists, the less tension surrounding that issue. For instance, Aboriginal Australia has a complex pattern of behaviour between the sexes that is firmly reinforced. Sisters and brothers, mothers-in-law and sons-in-law may not look at each other much less speak. Non-aboriginal Australia has legislated for marriage within and between the sexes, and marriage itself has become optional, with heterosexual marriages dropping below 50 % of the population.

In the Local Sustainability Project, the conclusion that paradoxes can cover dynamic relationships led to ways to negotiate viable alternatives to extreme positions. The relationships between each pair could be radically reconfigured for a community to accept transformational change. This was particularly fruitful with the four dimensions of transformational thinking identified above. In working with parts and wholes, synergy among the parts allows the emergence of a radically new whole. Rhythms of stability and change can create adjustments through developing a self-organising system. Allowing interactions among the diversity of individuals within a society generates a strong shared community ethos to develop. Collective learning arises from the fusion of inductive and deductive logic in abductive reasoning, which makes use of both, allowing rational and creative thinking to create leaps forward in the one enterprise. However, these changes from paradox to relationships represent

[9] Part 11: Form and pathology in relationship.

large changes in the current normal pattern of Anthropocene thought. Each will require compensatory action, a bridging position to help people make the changes that includes "but" and "or" by "both" and "and".

Resolution: Accepting Paradoxes and Framing Collective Questions

A third insight from the Local Sustainability Project studies provided a practical pathway to respond to the challenges of the other two insights. In the case of both individuals and groups, drawing on the full capacities of the participants in a shared area of concern required answers to a suite of seven questions. In each case, two questions were posed internally by the individual thinkers (intrapersonal and reflective questions) and five questions explore a full understanding of the context (physical, social, ethical, aesthetic, and inter-personal). The five questions of the context of the issue generalised from the field studies were:

With the hope of living in a peaceful, just and creative society:

- Is it physically possible for this society to support humans in their diverse chosen lifestyles?
- Is it socially a rule that all members of this society contribute their full potential to their hoped for future?
- Are there ethical principles that hold that all members of this society should respect each other and their supporting environment?
- Are there aesthetically satisfying ways for all members, no matter what culture or creed, to live in harmonious relationships with their social and natural environments?
- Is there a sympathetic understanding between the diverse interests in the same society and among different interests in other societies?

Expanding on the two inward and five outward-directed questions:

Introspective questions are best asked at the beginning of a collective learning spiral, before exploring the issue itself. Each of the diverse participants will have their own position on each of the answers to the outward-directed questions. For the individual, reflection is internal and lies within the more-than-conscious as well as the conscious mind. The cycle of this reflection is described as the final step of the process. Sources of insights into this process include Michael Polanyi, Jerome Bruner and Howard Gardner (Polanyi 1958; Bruner 1986, 1990, 1996; Gardner 1983, 1993).

Physical questions explore the material world. This is the world we can see, touch, count, measure, and invent highly creative tools to extend our own capacity to investigate and describe. Telescopes and microscopes, the abacus and the computer are all extensions of the human mind. The language of the physical world includes observations, numbers, descriptions, algorithms, systems, probabilities and diagrams. Seminal writer on scientific methods include Carl Popper, James Watson,

Helga Nowotny, Peter Scott and Michael Gibbons (Popper 1963, 1972; Watson 1968; Nowotny and Plaice 1994; Gibbons et al. 1994; Nowotny et al. 2001).

Social questions address the way every human being is reared in a community through social learning which develops their way to talk, cook food, count, build shelter, make artefacts, store resources, rear children and take part in the community's own way of constructing reality (Mead 1928, 1978). This is as true of the smallest village as the most powerful nation. The language is modelling, symbols, icons, metaphors, artefacts, patterns, and narratives. Influential writers include Michel Foucault, Roland Barthes and Pierre Bordieu (Foucault 1969/2002; Barthes 1957/1972, 1975; Bourdieu 1984, 1990).

Ethical Questions Ethical questions take the form of what should be? How should we live? How should we treat each other? How should we share resources, help others in need, live up to our own ideals? All human societies construct reference points intended to keep intact this complex network of rules for living together, some as icons, some as gods, and some as patterns of ideals. Ethics are not necessarily consistent or positive. For instance adultery is not legislated against in Western countries, although it may be regarded as immoral; in other cultures it brings a death sentence. There are reviews of ethical principles for human responsibility for other humans, other living things and the state of the material world by John Passmore, Thomas Berry, David Suzuki and all the religions (Passmore 1974/1980; Berry 1999; Suzuki et al. 1997/2007).

Aesthetic Questions Societies differ widely in their choice of aesthetic expression. In all cultures, aesthetic expression is a heightening of the emotions released by the patterning of ideas, sound, movement, visuals and language. Scientists express their sense of the aesthetic by describing their work as 'a beautiful experiment', 'an elegant solution'. Every community has some shared ideas about acceptable disorder. Interpretations of aesthetic responses come from literary and artistic reviews of the time. A seminal work is Roland Barthes *Image, Music, Text*, and other writers are Arthur Koestler and Mary Midgley (Barthes 1977; Koestler 1964/1989, 1967, 1978).[10]

Sympathetic Questions There are many patterns of sympathetic understanding that form within and between groups of people: the young and the old, within a family and among siblings, within communities of practice and instantaneously between one human being and another. In many cultures this form of understanding is expressed through a language of "thou" relationships. Sympathetic communication within inter-personal relationships is always partly non-verbal. Classic writing deep understanding between humans is Martin Buber's " I and thou", and Arnold Mindell on Deep democracy (Buber 1975; Mindell 1992).

Reflective questions are answered by considering the answers to the introspective questions and the outward directed inquiries as a whole. To ask and answer reflexive

[10] See http://en.wikipedia.org/wiki/Mary_Midgley [accessed 30.4.14].

questions is the greatest challenge of all in forming a collective mind, individually and as a group. Reflective questions ask for skills such as imagination, creativity, and intuition. Traditional ways of bringing the answers together include the Gestalt, a creative leap, hypotheses, collage, a symphony, meditation, prayer, and poetry. The results of reflective thinking are appearing from the digital world in data visualisations, videos, face book, and twitter patterns. This is the domain of the philosopher Isaiah Berlin (1959/1990, 1998). Others influential writers are Pierre Teilhard de Chardin, Gregory Bateson, and Stephen J. Gould (1977, 2002, 2004).

While the order above appeared to be the optimum order to ask the questions, in practice, in the range of case studies of transformational change, the sequence can be entered into at any point. There is no hard and fast rule. The fixed points are that all the questions are asked, answered by the appropriate form of evidence and by the full range of key interests and the process concludes with the reflection on the whole.

Example 1. Asking the Collective Questions of Oneself

The first step for each individual in a collective learning spiral is to consider their position on the four re-oriented paradoxes (parts and wholes, stability and change, individual and society, and rational and creative), and to ask the seven collective questions of themselves in relation to the issue of concern. Since the dominant approach to the four paradoxes during the scientific era has been to place them in opposition to one another, collective thinking here may require a cognitive shift in one's own thinking. For those already perceiving each paradox as a dynamic connection, as synergistic, stochastic, developmental, and holistic respectively, they will need to appreciate that others will still be considering them as poles apart. For those involved in transformational change, changing the content makes very little difference to the system, while changing the relationships between the parts of the system in this way generates major differences (Capra 1996).

Introspective questions involve the individual in establishing pathways from their conscious to their more-than conscious mind. Recent neuroscience has identified 95 % of an individual's use of their brain as taking place within their so-called unconscious mind (Lackoff and Johnson 1999). Asking questions on the physical domain asks that you realistically assess your own experience in the field. Social questions are asked from within the questioner's and answered from within the respondent's own social profile. Where the two profiles match there is a risk of too narrow an understanding. Where the social profiles differ there is a risk of misunderstanding.

Ethical questions are not always acknowledged, shared or even recognized as ethical principles at all. Yet every human being is guided by ethical principles which determine their relationships with others and their decision-making. Aesthetic questions may be in the eye of the questioner; they are also preset by cultural expectations of beauty and ugliness, naivety and elegance, boredom and excitement. Sympathetic questions of oneself about one's own relationships with places, living and non-living things and human beings are already part of your identity. There can be a difference

between people and places that social rules say you ought to identify with and the ones you actually do.

Reflective questions bring together the questions asked and answers found in the other six avenues of thinking and this requires the choice of an integrative pathway. By adulthood everyone has arrived at a personal style of bringing diverse ideas together in their everyday decision-making. Depending on the particular field, you may be accustomed to using reflective processes of reaching a gestalt, seeking synergies, making creative leaps, building collages, saying a prayer, meditating, finding a synthesis and using your intuition.

For each individual, the extent to which they are prepared to spend time on the seven questions will vary considerably according to priorities. For anyone designing, supervising, evaluating or writing up a collective inquiry or collective learning program, this first step is essential. For the participants in the project, the priority will be determined by the designer. In the example which follows, the core members were asked to share their answers to the interpersonal questions.

Example 2. Taking Part in a Collective Learning Inquiry

Both Brown and Lambert 2013 and Brown and Harris 2014 contain many examples of the collective mind in action. In the example that follows, the focus issue is the management of regenerative agriculture, with the aim of achieving optimum landscape and social health. This issue involves transformational change that affects the entire living and non-living planet; impacts on every different locality; calls on all interests in a community or nation; affects all cultural traditions; crosses all disciplinary boundaries; and calls on all seven ways of understanding the issue. This makes the issue a complex and wicked problem, suitable for taking as an example of applying a collective mind.

The relationship between regenerative agriculture and social health generates several wholes. The whole of the population of interest can be taken to be the dominant production agriculture, with high levels of fertiliser, pollution and mechanical treatment of soil; or it can be the indigenous population who managed the whole Australian continent sustainably and productively for 40,000 years. Or it can be the regenerative landscape management which calls on a mixture of organic farming and efficient mechanical practices, informed by the landscape's indigenous history. Each of those wholes has different sets of parts, and answers every one of the seven questions quite differently. Production agriculture is driven by profit-taking, giant chemical organisations, agronomy, and often absentee landlords. Aboriginal peoples worked to a land ethic in which the land determined their human as well as their land management relations. People were responsible for the land on which they were born. Regenerative farmers formed a sympathetic community of practice, aware that they needed mutual support and to learn from each other.

Exploring the other three paradoxes gives similar depth to an understanding of transformational change. The relationships between stability and change affect each

of the potential wholes. The Australian continent is old and depleted of fertile soil. Each of the wholes has a community which seeks to establish a stable future. This is in a highly unstable climate marked for its floods and droughts; and in a resource-dependent country that is highly vulnerable to overseas markets. Thus change is inevitable and will affect each of the stable states in a different way. The outcome will be determined by the system of people, land and the zeitgeist that makes up any particular whole.

In seeking to advance regenerative landscape management in the service of landscape and social health the relationship between individuals and their community is more important than either separately. So is the importance of giving rational thinking and creative thinking equal emphasis in making decisions based on the interpretation of the other paradoxes.

Collective Learning Step 1. Starting Out: Scoping the Field

The collective learning spiral starts with establishing the shared concern for the problem among all the interests in an issue. For regenerative agriculture and social health the breadth of the interests can make this seem almost impossible if they are asked to agree on the cause or the solution. However, they can readily agree that the connections between the two are a shared concern. Moreover, since all those involved will be making their decisions based on the evidence, the seven collective questions form a common language and the answers provide a shared understanding that allows everyone to make their own full contribution.

In this project a shared understanding of the common concern was developed from 30 founding members with interests in farming, research, management, conservation, sustainable development and design. With later consultation on email, and a day-long workshop, the scoping they developed on the core issue was:

> Regenerative agriculture is a collective enterprise designed to realize an emergent capacity to improve landscape health and with it individual and societal health. It seeks to do this by harnessing the minds and experience of all with an influence in land and in society in regenerative landscape management.
> Important in this process will be knowledge and practice of although not limited to, indigenous people, agriculturalists and other land managers, education and research institutions, government bodies, the health professions, food industries, town planners, neighbourhood groups, those involved in social movements such as healthy urban food systems, healthy soils, and Landcare and community self-sufficiency.

Collective Learning Step 2. Sharing Ideals: Aims for the Program

The original 30 met again to map out a possible course of action, beginning with sharing their ideals. The main interests present were farmers, environmental scientists, economists and collective and action researchers. The group were invited to respond

to share their own individual answers to the seven collective questions. The aim was not to agree or prioritise; it was to become familiar with each other's positions.

In summary, some of the individual answers covered the seven questions as follows.

Our aims for the outcomes:

- A change in the trajectory of thought, practice and health from degrading to improving with multiple benefits at all levels: social, landscape, health, economies (an ethical question);
- Support human well-being by and with supporting more sustainable production systems (a biophysical question)
- Realising the dream so it can readily change people, landscapes, thinking, working, paradigms (an aesthetic question)
- Realisation of capacity of the social-ecological system, inclusion of community/environment as a whole (a reflective question)
- Personal fulfilment, advocacy across landscapes, participatory land management (a reflective question)
- Achieve something for society and not just for ourselves (social)
- Seeing a network of people with the same objectives actually making a difference as distinct from tinkering round the edges (sympathetic)
- A shining mind-change recruiting program that Australians can relate to—like the Opera House, Uluru and Bondi Beach (aesthetic)

Collective Learning Step 3. Collecting Facts: Descriptions of Supporting and Impeding Factors

Extensive information on the physical status of landscape production on the one hand and regenerative agriculture on the other proved to be readily available. However, the participants' priorities for collecting the data required differed widely, even dramatically. Data collection (1) a detailed profile of physical risks to agriculture, to health and to society from the current agricultural tradition (biophysical evidence). Data collection (2) an almost lyrical account of the emotional and social benefits from a collective regenerative agriculture (social, aesthetic and sympathetic evidence). Data collection (3) an in-depth study of the different lifestyles and practices of production and generative farmers (social and biophysical evidence). Data collection (4) the research traditions and disciplines of different approaches to agriculture and social health (social and sympathetic evidence). Data collection (5) the community of successful regenerative practitioners (sympathetic evidence). Data collection (6) principles driving production and regenerative farmers (ethical evidence).

The aims of the project made it clear that all approaches are welcome and can contribute to each other, and that there was no incompatibility between the data collections. Yet the authors of several of the collections saw them as taking the project

in different directions, and for some, these would be in opposite directions, generating considerable conflict. That conflict led to one resignation from the program.

Collective Learning Step 4. Generating Ideas: Tapping in to the Potential for Transformational Change

Following the original meeting a transformational change strategy developed among the group, designed to meet the goals outlined in the vision. The elements of the strategy covered all dimensions of social change. There was a division between those who say the emergent and developmental nature of the program ideas as sufficient and inspiring, and those who saw it as failure to develop an effective organization.

Collective Learning Step 5. Moving to Action: Initiatives in Progress

By 12 months after the original meeting, the following activities were taking place:

- Alliances had been formed with parallel organisations such as *Soils for Life*, *Safe Food Alliance*, *SEE* (Society, Economics, Environment) *Change*, *International Association of EcoHealth* and *Innovative Farmers*.
- A writing group was established in the Fenner School, Australian National University for mutual support for the writers of seven books on the project theme who had publishing contracts.
- Members were attending international meetings on project themes.
- A website was established, with a blog and a contact point for allied interests.
- A consultancy file and a reference file on community of practice of collective minds were being established as a public resource.

Collective Learning Step 6. Following On

As the program developed it became time to think of how the project could become established for the long term as a permanent catalyst for the desired transformational change. Canvassing members generated alternative options which included a formal structure and an open network, an information base and a dialogue hub, a separate organisation and a series of partnerships, and a unique set of ideas and a shared vision.

Following collective learning principles, the project coordinating team decided that these options were not in conflict. They were all valuable and collaborative steps forward, as the actions in Step 5 demonstrate. The project continues; the outcomes are still uncertain.

Conclusion

This volume documents the increasing spread of transdisciplinary thinking into the fields of education, research, science, workplaces, politics, the arts, social planning and personal decision-making. This chapter has recorded a move to go beyond transdisciplinarity to collective thinking. Transdisciplinary thinking maintains the disciplines as a take-off point for including a wider range of evidence on an issue. In doing so it inevitably continues to remain grounded in the university and research tradition, and in formal administration, with their inheritance of the scientific Enlightenment and the dominance of empirical thought.

Collective thinking offers the opportunity to access the full potential of human thought, no longer restricted to fragmented constructions of knowledge and the limitations of purely quantitative evidence. Field studies found that collective thinking at the personal and at the group level asks for reframing opposites as dynamic relationships, and moving from the limited access to understanding offered by empirical evidence to include asking introspective, physical, social, ethical, aesthetic, sympathetic and reflective questions. One argument for bringing the collective mind into the mainstream is that it is required in order to interpret and influence the transformational changes of the Anthropocene. Another is that human thought has reached an era in which it can expand in unprecedented directions serviced by a digital revolution.

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