Regional Strategies for Disaster Preparedness
Symposium EMCSR 2012

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The purpose of this paper is to outline a comprehensive plan to accelerate mitigation of CO2 emissions and to achieve an effective state of preparedness for disasters in the Australian Capital Territory. As the paper documents, the current organizational arrangements are far from adequate let alone effective.

In going to a genotypical solution, the plan has many spin offs and fits the IPCC's (2012) definition of a "low-regrets" strategy. "Low-regrets measures include…risk communication between decisionmakers and local citizens, sustainable land management, including land use planning; and ecosystem management and restoration" (p14).

The IPCC recommends an integrated "portfolio of actions (which) are more effective when they are informed by and customized to specific local circumstances,,,Successful strategies include a combination of hard infrastructure-based responses and soft solutions such as individual and institutional capacity building and ecosystem-based responses" (p15). This paper addresses all of this with the exception of hard infrastructure as it is not at all certain that we lack sufficient hard infrastructure: it simply wasn't used effectively (Doogan, 2006).

The setting

The Australian Capital Territory (ACT) is a small area carved out of NSW for the purpose of siting the national capital, Canberra, roughly half way between Sydney and Melbourne. Canberra is a planned city originally based on a design by Walter Burley Griffin (with a little help from his wife Marion Mahony). It consists of seven geographically separate 'towns', with another on the way. Each town has a town centre and each suburb within a town has its own local shops. Scattered around Canberra are a few small hamlets or villages whose total population is less than a thousand. In 2012, the total population of the ACT is projected to be 360,500 (Table 1).

Because of its planning and design, Canberra is known as the 'bush capital' as no more than absolutely necessary of the original vegetation has been disturbed in the building, and there have been extensive replantings of native and also deciduous vegetation. The city is an urban forest with thriving wildlife of all sorts, most of which are protected including snakes and possums. It is not at all unusual to see kangaroos hopping around. Unfortunately, Canberra was also designed for the car so these two aspects of the city are often on a collision course.

Up until about 20 years ago, the climate was dry with extremes of both hot and cold as Canberra is on the Southern Tablelands and relatively high for Australia. However, whenever we get significant rain and floods as we have for the last two non-summers, people discover that the territory is actually covered by a network of small creeks and tributaries of the Molonglo and Murrumbidgee rivers. And unfortunately, they also discover that engineers like to build roads on nice flat spaces which turn out to be flood plains. On 26 January, 1971, seven people drowned in cars in a flash flood on a new arterial that had been open for only a few days (Wikipedia).

A sizable area of the west side of the ACT also consists of dense, rugged mountainous bush in the Namadgi National Park. It was out of this bush that the firestorm that destroyed a large section of the south western suburbs roared, after it had wiped out a huge area of the Park, Tidbinbilla (where the space tracking station is), the Mt Stromlo Observatory and several farms and rural villages.

In other words, while Australia generally is a land of ecological extremes, the ACT is very vulnerable to fires in particular. And although our normal condition is drought by world standards, for which we are prepared, the last drought which finally ended with this past summer's floods, lasted nearly 15 years. That too was extreme. So the area is disaster prone.

Now climate change is well and truly upon us as we saw with the accelerating rate of events world wide in 2010-2011. Climatologists tell us that with a rapid reduction of emissions, we can still avoid the worst climate change but increasing disasters are inevitable. On 2 December, 2005, we were hit with severe storms and possible tornado. On 27 February, 2007, the city centre area was hit by a massive supercell with billions of dollar damage to laboratories at the Australian National University amongst other things.

Because the ACT has a high SES relative to the country at large, it has long been known as a social laboratory. Its citizens usually vote Labor (progressive) but recently, there has been an increasing vote for the Green Party and there are currently 4 Greens in the 17 seat ACT Legislative Assembly. The government is already implementing very effective plans for zero waste, increasing green energy and other climate related issues. It also tries to be participative as is witnessed by its fortnightly 'Chief Minister's talk back' program on local ABC radio. It may well be interested in this plan.

Open Systems Theory (OST)

This is very much a paper about applying OST to improve an important and practical area of public interest. For those who are interested in further theoretical details, I refer them to my keynote paper. Here I am going to revisit only the concepts of the open system and the genotypical design principles because they are specifically referred to in the text.

Figure 1 shows that system and environment and their interrelations are mutually determining and governed by laws (L) which are able to be known. The system (designated '1') acts upon the environment (designated '2'). This is the planning function (L_{12}). Environment acts upon the system and is known to us through ecological learning (L_{21}). L_{11} and L_{22} express the intrinsic nature of the system and environment respectively (Emery & Trist, 1965; Emery F, 1977). The laws that govern them are implicitly learnt about in the SC.

The L_{22} is a global social field that consists of the ideals, values and expectations of the people of the world. In any strategic planning, it is important that the current state of the L_{22} is known and analysed as any plan that ignores it will be lacking the major source of variability that the planners will encounter in its implementation.

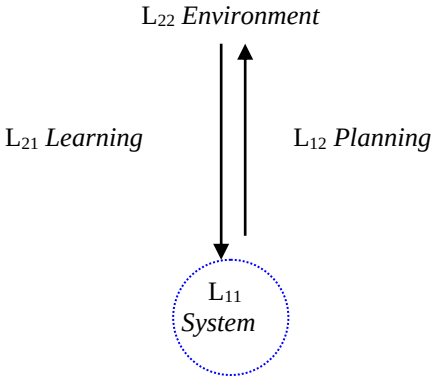
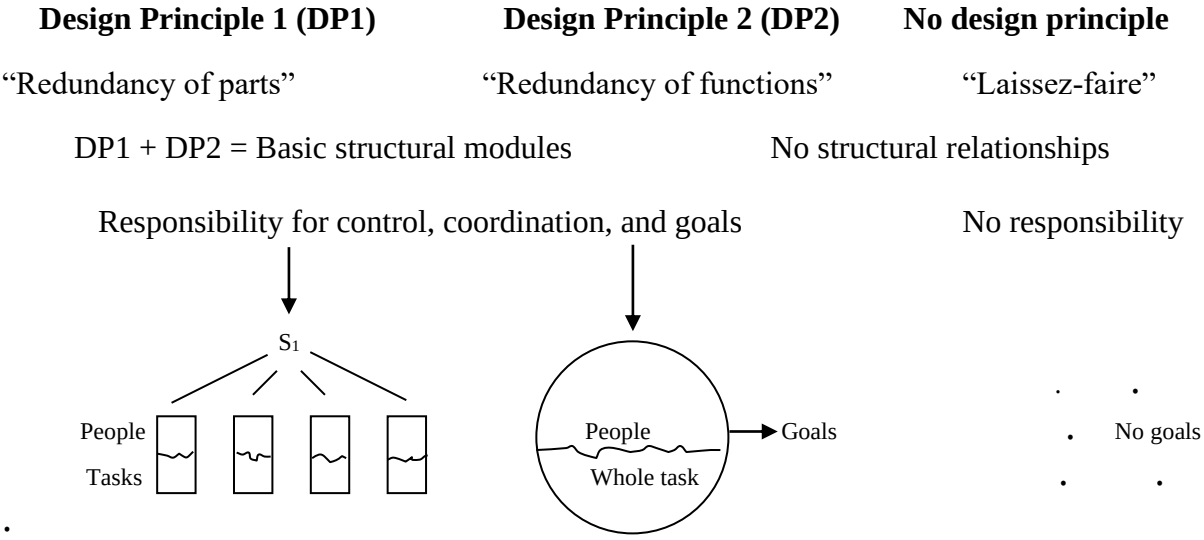


Figure 1. The Concept of the Open System

The concept of the open system is the basis for the external structure of the Search Conference (Emery M, 1999).

The two genotypical design principles and laissez-faire as shown in Figure 2 form a complete and mutually exclusive set. There are no other choices. The first design principle (DP1) is called 'redundancy of parts' because there are more parts (people) than are required at any one given time. Its critical feature is that responsibility for coordination and control is located at least one level above where the work, learning or planning is being done. It is governed by asymmetrical dependence. DP1 yields a supervizory or dominant hierarchy. The second organizational design principle (DP2) is called 'redundancy of functions' because more skills and functions are built into every person than that person can use at any given time. Its critical feature is that responsibility for coordination and control is located where the work, learning or planning is being done (Emery F, 1967; Emery M, 1993). It is governed by symmetrical interdependence. DP1 actively deskills and demotivates while DP2 does the opposite (Emery & Emery 1974; Emery & Hall-Jones, 2011). DP1 induces competition and, therefore, self interest while DP2 induces cooperation and care for the common good.



Note: S_1 = first-line supervisor.

Figure 2: Genotypical Organization Design Principles

Laissez-faire (Lippit, 1940) completes the set. It is defined as the absence of a design principle and, therefore, the absence of structure and the absence of responsibility for coordination and control. In its pure form, it is just a collection of unrelated individuals each doing 'their thing'. Laissez-faire today commonly takes the form of an organization where the structure on paper is DP1 but the controls have been loosened to the point that there is widespread confusion about where responsibility for control and coordination are located. These forms of organization are increasing in North America and now elsewhere: they are attempts to accommodate the increased call for participation. Most involve the change of name of the first line supervisor to Team Leader or Coach (TLC) and have mistakenly been designated as empowered workplaces (deGuerre & Emery, 2008).

These TLC forms have nothing to do with what I am proposing here. Organizations that formally employ people are legal entities; a change of design principle is systemic and, therefore, the legalities must be changed. This change will also ultimately require the redesign of virtually all subsystems because these have been designed for DP1 structures. The most obvious is that career paths must change to a pay for skills held system. Classification systems don't work either, nor do individual performance systems.

Firestorm 18th January, 2003

It was the 2003 firestorm that really showed up the weaknesses in our emergency services organizations and the need for change. A brief description is in order to convey this need.

Here is the official version of the firestorm from the esa website: just the facts - well some of them.

"In 2002, most of Australia experienced one of the most severe droughts on record. On 7th and 8th of January 2003 there were numerous lightening strikes over the Australian Alps, which ignited at least 89 fires in Victoria, 74 in NSW and three in the ACT. Those fires not controlled, burnt for over 60 days and eventually covered 1.96 million hectares. Four of these fires directly affected the ACT, starting in the western ranges on the 8th January 2003 and gradually increased in size over the following 9 days. Due to severe weather conditions experienced on the 18th the fires spread rapidly out of control across Namadgi National Park, pine plantations and leased grazing lands towards Canberra. Fire then entered into the suburbs of Western Creek between 2pm and 6pm in the afternoon resulting in the deaths of four ACT residents and the burning of 164,000 hectares (or nearly 70%) of land in the Territory. Over 500 houses and most of the Mt Stromlo Observatory were destroyed, fire damage to a further 315 houses, and major damage to various infrastructure and facilities. Ninety percent of Namadgi National Park was burnt (much of it severely) and severe fire damage occurred to the Tidbinbilla Nature Reserve, the Murrumbidgee River Corridor, the Stromlo Pine plantation and pine plantation west of the Murrumbidgee River. The fires also effected the ACT water catchment, and as a result Canberra's water supply" (esa).

Here are some of the other facts:

It was clear to anybody who was looking and listening on the morning of the 18th that we had a critical situation on our hands. The 4 fires had been burning for 10 days in extreme weather. The air was thick with the smell of burning eucalyptus. It was heading for over 40C and blowing a gale. I started preparing my house at about 11.00am, checked all the hoses, filled up the bath tub, soaked all the towels, and in every way was prepared for the onslaught. Some friends turned up to help and about 2.00pm as the sky started turning red and black, we started soaking the roof and walls.

“The ferocity of the 2003 fires was unprecedented…Two official enquiries found residents and emergency authorities were not prepared for what struck Canberra on January 18 that year…Now there is a clear message gone out to the community and the community has, by and large, accepted that their shared responsibility is real and the reality is that there aren't sufficient fire trucks to turn up to every household during major fires (Doyle, 2008).

I discussed the firestorm with an ex-member of the Army’s Fire Unit a couple of weeks after the disaster. He said: “The Army likes ‘out’. The current policy of ‘containment’ doesn’t work. They could have put those fires out when they first started but their current policies of saving money and claiming it’s too dangerous, plus the lack of coordination between NSW and the ACT meant it was going to be a disaster that should never have happened. It would never have happened if the Army had dealt with it. The fires should have been put out” (personal communication).

The Coroner agreed with him. ‘I conclude that the failure to aggressively attack the fires in the first few days …was one factor that led to the firestorm…which resulted in four deaths, many injuries (some of them extensive and permanent) and property losses valued at $600 million to $1 billion…Once the four fires had combined to produce the firestorm, containment and control were impossible, despite the best efforts of the firefighters” (Coroner’s covering letter to the Attorney-General, Doogan, 2006).

“A 2006 ACT coroner's report laid responsibility for the catastrophe squarely at the feet of the ACT's Emergency Services Bureau and its senior officials…But the coroner also found ACT Chief Minister Jon Stanhope knew two days before the bushfires ripped through Canberra's outer suburbs that a potential disaster was imminent. He "did nothing" to properly inform the public of the threat, she said” (Drape, 2010). The Coroner wrote “I conclude that the failure to warn the community – despite senior personnel of the Emergency Services Bureau having knowledge that the fires would burn into the suburbs – was a factor that exacerbated the property losses and resulted in panic and confusion” (Coroner’s covering letter to the Attorney-General, Doogan, 2006). Hundreds of residents are now in the process of suing the ACT and NSW governments.

All households in the ACT are supposed to have bushfire plans but the combination of reliance on government services (the basic assumption of dependency – Bion, 1952; 1961) plus the extraordinary speed and temperature of the firestorm plus the lack of warning meant that even those who did have plans were overwhelmed. First hand testimony to the Coroner from Police and SES workers on the ground documented the population in shock, wandering around in the smoke and burning ruins.

Throughout her 800 page report, the Coroner documented the massive failures of the ESB and its officials. In section 3.13, she documents the “apparent corporate loss of memory” as officials attempted to evade questions about their performance (Doogan, 2006, p51). This was after two attempts by these same people to get her dismissed, which ended in failure in the ACT Supreme Court. The Coroner made it clear that she preferred the counsel of bushfire experts to some of the bureaucratic evidence. The experts argued on the basis of the scientific evidence that the firestorm was predictable and had been, in fact, predicted. That evidence was ignored as was the advice of experienced firefighters in the Bush Fire Council.

But just as damning was the evidence that there had been no preparation, even for a normal fire season, and this had been no normal season. We had had years of extreme drought and mean temperatures were running 5C above normal. The Bush Fire Council (BFC) which consisted of experienced firefighters had previously prepared for the season but when the ESB was formed, they advised the BFC that it was to be an advisory service only.

In other words, preparation was handed to bureaucrats who had no knowledge of fire fighting (p97). They sat at their desks.

As the city had been hit with fire in 2001, this negligence was unforgivable.

The timeline of events from the 8th to the 18th January really documents the inability of a bureaucratic or DP1 system to prepare, or respond flexibly or adaptively to anything really, but certainly not to a disaster. Again the Coroner documented the long list of bureaucratic stuff ups.

On the day itself, the pattern was repeated. After the Firebird flight of early 18th, there was a planning meeting at 9.30 which planned a media conference for 12.00 noon. It was expected that the city would be hit by about 6,00pm, later revised to 3.00pm. On that critical morning, there were people sitting around, who were desperately needed in the field, waiting to be told where to go because nobody had worked it out. The police were involved from early on the 18th but were in conflict with the ESB over whether or not people should be evacuated should the catastrophe eventuate. The ESB was still claiming it could hold the fires. The Ambulance Service and hospitals were not informed or prepared for the impending disaster.

The Coroner's report documents the litany of failures, of planning, of incident response, of communication from the media centre, with each other, with their crews in the field, and with the other services such as police and ambulance. There was a failure of coordination in general. Nobody seemed to have responsibility for anything. These are the classic symptoms of a DP1 structure.

There was a meeting scheduled with the Chief Minister for 2.00pm. That was the time at which the four fires converged into one gigantic firestorm complete with tornadoes of fire. The firestorm moved with a speed and behaved in ways none of the experienced firefighters had ever seen before.

A state of emergency was declared at 2.45pm and the emergency sirens starting wailing shortly after. By this time there was already massive destruction and people had died. But it wasn't only people. The Tidbinbilla Nature Reserve was wiped out and only one Koala survived – a badly burnt 'Lucky' – who became a national symbol of hope.

But apparently nobody learnt anything. "In the aftermath of the 2003 fires, the Territory Government created an independent emergency services authority as recommended by the Coroner. But 18 months ago, the move was reversed and the emergency services again became part of the Justice and Community Safety Department" (Doyle, 2008). This provoked a bitter dispute during which experienced firefighters complained of bureaucratic processes and the problems it caused, exactly those the Coroner had documented. They drove their fire trucks up to the steps of Parliament house and left them there. Experienced firefighters know the value of cooperation and always go into the fire as cohesive, cooperative units. They refused to be, and to have their proven first hand expertise, subordinated to a failed system. They extracted some minor concessions towards independence but both the Rural Fire service and urban Fire and Rescue remain within the Justice and Community Safety department.

In addition, "Now residents have taken matters into their own hands joining a community fire unit - a program that is in place across the ACT where residents form the first line of defence before fire fighters arrive" (Doyle, 2008). The traditional anti-authoritarian stance, the traditions of local, cooperative groups, self reliance and volunteering in Australia (Ward, 1958) reasserted themselves. There are now 50 CFUs, about 850 volunteers who are residents trained by the Fire and Rescue service, covering 50-80 houses each in areas adjoining bush land. These groups have now been coopted into that service and into the DP1 structure. They

do community education, ensure there is fire preparation and also help with mopping up after the inevitable fires. They are not firefighters but now have to follow the directions from the top of that service. Hopefully, they have not lost their spirit of cooperative resilience.

The following plan aims to enhance that community response, and all others, by both better mitigation and adaptation and effective response to the inevitable future disasters.

Phase 1: A sustainable ACT

This phase of the work concentrates on enhancing the ACT population as a sustainable, cohesive and active adaptive force for change, one that can not only better itself as a 'community' but can also through that enhanced cohesiveness, work effectively with all emergency services to reduce the human impact of future disasters. This is not just about spontaneously volunteering to clean up and provide support as we see in the aftermath of fires and the Queensland floods of 2010-2011 where huge armies of volunteers turned up from everywhere to help: it is also about preserving what remains of a stable climate.

I am sure that you all aware of the dire future we all face, to say nothing about what our children and grand children are going to face (Hansen, 2009). It is encumbent now on every person in the world that we make every effort to stop the CO2 emissions in every way we can. Governments must do what they can and so must the United Nations. But so too must communities.

The problem here is that we have almost lost 'communities'. We see 'community' only now when disaster strikes. There are small communities of interest such as those that form between parents of children in a particular pre-school and clubs and associations. But in 'normal' every day life, we have now mainly isolated and/or dissociated individuals and families. Many do not know their neighbours. Dissociation entered the social change record in Australia in 1977-78 (Emery & Emery, 1979) but the record for 2004-2009 documents a huge increase in both dissociation and superficiality (Emery M, in press).

So while the major purpose of this part of the plan is to radically raise the level of sustainability in the ACT, it will also serve the purpose of returning the population from its various maladaptions back to active adaptation.

Table 1. Projected population of the ACT for 2012.

Town	*No. of suburbs*	*Population*
Inner Belconnen	15	48,550
Outer Belconnen	11	43,200
Inner Tuggeranong	8	40,300
Outer Tuggeranong	10	48,450
Molonglo	2	1750
Gungahlin - Hall	12	44,000
South Canberra	16	27,000
North Canberra	17	48,700
Woden Valley	12	34,300
Weston Creek	9	23,550

Chief Minister's Department (2009)

Table 1 presents the projected population for the ACT in 2012. I would prefer that each suburb had its own SC but I very much doubt that the associated cost would be supported. There is also the argument that individual suburbs are not particularly unique and many extended families for example are spread over several adjoining suburbs. Therefore, I have made the decision to make the 'town' the basic unit of the system. The two very large towns, Belconnen and Tuggeranong have been split into inner and outer to make them comparable with the size of the other towns.

This plan asks people in every town plus their associated region of the ACT to create *The Sustainable Future of the ACT* and put it into practice in their own towns with their own unique characteristics and needs. Each town SC should contain people from the surrounding small hamlets and properties so that city people won't forget their regions and the importance of their surrounding physical environments. If we were to hold separate SCs for the rural villages, we may also exacerbate the rural/urban divide that already exists in Australia.

The design is as follows: using the term 'town' to cover all cases, each town has a SC (2 stage model) addressing the sustainable future of the ACT.

Preparation

A SC is only an event in the middle of a much longer process of preparation and planning at one end and implementation at the other. Any SC is only as good as its preparation. The process designers and managers, hereafter just called managers, engage in a comprehensive discussion with those who have initiated the idea or in this case, firstly with the ACT government and its emergency agency who would help identify some key people in the community interested in disaster preparedness and response. Some of these people would quickly be identified in the Community Fire Units (CFUs) which spontaneously sprang into being after the 2003 firestorm.

Once a core community group was identified, the managers would work with them to explore what information participants would need before the Search, if there was a need for any further research, what timeframe should be put on the Search, whether the manager's draft design is adequate, any other matter that may be important in a particular case, and to get them started on the selection of their participants.

For all varieties of community SCs which includes issue, industry, nation and international etc SCs, virtually anything other than organizational SCs, the appropriate process of selection is called the Community Reference System (CRS).

- First research and draw a rough social map of the system. It should cover all relevant areas, e.g. for the future of a geographical community, small and large business, unemployed kids, voluntary, farm sector, churches, interest groups etc,
- Decide the relevant criteria against which people are to be judged: the first and foremost is known to be *actively concerned about* the system or purpose of the Search; in this case, the sustainability of their town and its region. Add in others that are agreed to be critical, e.g. intention to stay in the community, knowledge of ecosystems.
- Pick a starting point person in each major sector of the map and ask them for two or three names that fit the criteria. This is for help only, no guarantees of invitation are given.
- Ask each of the new names to give two or three names that fit the criteria.
- After one or two iterations of the process, some of the same names should reappear. Select these from the total list and add to cover the map of the system (jigsaw puzzle). The final list should cover the range of relevant demographics (Emery M, 1999, p187).

Because of the criteria for selection, for each town Search, it will inevitable that the final list of participants will include several from the SES volunteers and also the Community Fire Units set up after the firestorm. Therefore, we have an automatic bridge between the parts of the exercise.

"As the SC participants must engage in active adaptive planning using puzzle and ecological learning, they are chosen because they carry a piece of the jigsaw puzzle in their heads. If a major piece is missing, the puzzle solution may be inadequate or the implementation difficult. People involved in a system or community know which people have which bits of knowledge. The great advantage of this approach for geographical community, industry and issue searches is that the 'community' broadly defined determines the participants. An additional advantage is that in the process of using it, both the SC and its purposes must be explained to prospective participants, thereby providing education and aiding later diffusion" (Emery M, 1999, p187). Group methods for use of the CRS have now also been explored and usually result into a much faster and diffusive process of selection and education.

Once the selection process is complete, participants are briefed about the major concepts underlying the SC so they will understand the process and design. The concepts that should certainly be included are the:

- open system so they will understand the importance of the L_{22} and the systemic nature of the design
- design principles so that they will understand why they hold responsibility for the work, the outcome and the implementation, and why managers do not intervene in the content of the work
- conditions for influential or effective communication so they understand the need for total openness (no individual notes), the reality of a shared, objective field and psychological similarity so they will understand aspects of the design and the development of trust
- rationalization of conflict, particularly for cultures which are apprehensive about conflict and expressing difference.

These concepts and the final design are again briefly reviewed on the first afternoon of the SC, just before the expectations session so that any misunderstandings are headed off before the substantive work begins. The expectations session serves the purposes of mutual introductions and an airing of what participants expect and hope to get out of the event. It provides yet another opportunity to ensure the work goes smoothly as if there are expectations that cannot be met, the manager(s) must explain why.

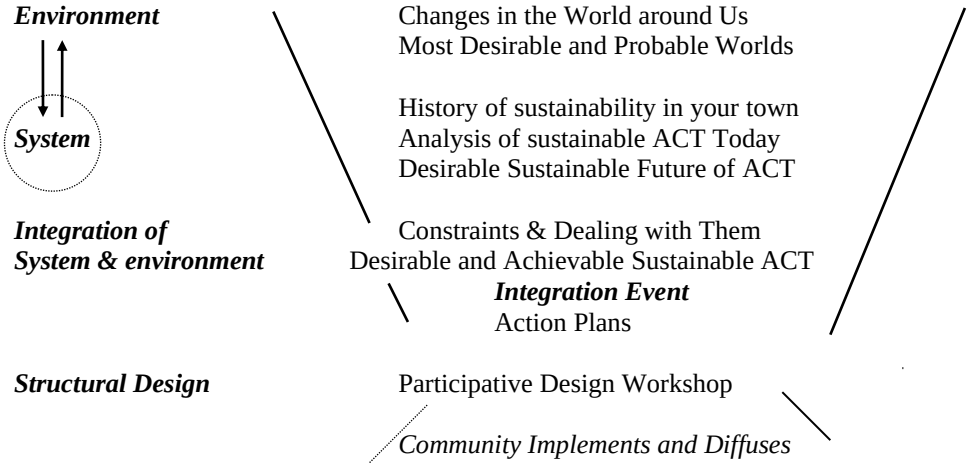


Figure 3. The Future of Sustainable ACT 2020 (2 Stage Model)

SCs usually start mid to late afternoon: this is the time for the final briefings, expectations and introductions.

Work starts on the L_{22} after dinner and is continued next morning. The global scenarios set the major context within which the planning will continue. Having a good handle on the most probable world we are walking into is illuminating and often contrasts starkly with the world the participants want to create. This will certainly be the case in these events as while the scans from 2004-09 showed a dramatic increase in the number of items relating to disasters and climate change, we can expect a high level of mentions given the accelerating rate of disasters in 2010-11. Therefore, without concerted and rapid action to mitigate and adapt, the most probable future is going to look very bleak indeed.

The history session consists of the community building itself a shared picture of how it came to look the way it does today by talking about significant events and changes. They then analyse their community today through simple 'keep, chuck, create' lists and use these as preparation for the task of determining their most desirable community in 2020. They identify the major constraints from their previous work, both L_{22} and L_{11}, to implementing their most desirable region and then work out how to deal with them. Depending on how well they can overcome the constraints, they may or may not wish to modify their most desirable town.

Series of SCs integration

In a series of SCs where an integration event is required, the SCs finish after the community has decided on its most desirable and achievable town (strategic goals). Each SC selects the required number of participants for the integration event which is usually half to one day. In the integration, they simply put up their strategic goals, discuss and integrate them in exactly the same way they learnt to do in their SC (Emery M, 1999, pp198-201). They group up those that are the same in meaning or a part of another and keep the stand-alones so that nothing gets lost.

There will be 10 sets of strategic goals to integrate in this case so we will do it in 2 stages. Stage 1 integrates 2 groups of three sets of goals and one group of four. In stage 2, we will integrate the now 3 sets into 1. The integration ensures knowledgeable and cooperative work across the whole region. If there are goals that are unique for a particular town, these are given to that town to implement. Those goals that are common to all towns will be implemented by all. If there are goals for which only the ACT government is responsible, these can be handed on to the government.

The ACT government should be invited to this event so that it can see for itself the directions in which the community is heading and what they see the government doing. It may also give the government some further ideas for their sustainability initiatives.

Participants then reconvene their SCs, self select around the strategic goals they are responsible for and do action planning in the normal way. The groups that form to do the action planning and start the implementation become close as they continue working together. They will then also be available as the basis of a community response to work with the SES when the next disaster hits.

There will actually *not* be an extremely long list of goals for the ACT as experience shows that there is a massive degree of commonality in the strategic goals that people produce. This is because the SC elicits the set of ideals during the work of designing the most desirable world and they continue to build these into their most desirable system. A lot of differences are merely semantic.

Modified PDWs for implementation

In the modified PDW, they design a very simple little DP2 organization based on their action planning groups for implementation to continue cooperation and high energy levels, and ensure diffusion.

The 2 stage model has been tested in practice over the last 20 years and a basic model has emerged for a PDW for organization design rather than redesign. It is simpler than that for redesign as shown in Part 2.

The major differences in workshop design between those for redesign and SC follow up (design) are:

- These people may never have worked together before and as there is no existing organization, the 6 criteria must be done on a previous similar experience. Most people will have been involved in some community or voluntary activity which involved trying to get some plan achieved.
- Goals have already been set as in the Most Desirable System and action plans have been devised for these.
- If particular resources such as skills do not reside within the implementing group, they must be brought in. Communities usually will not have the resources to start training up people in specific skills or knowledge. Instead, the community must do some further action planning to acquire the required skills or other resources, either directly or through the process of diffusion.

Phase 1. Analysis

Briefing 1 - Design Principle 1

Group complete the matrix for the 6 criteria using a previous experience similar to the implementation now facing them.

Reports and diagnostics

The community lists the major essential skills required to implement the action plans, then completes the matrix in terms of who holds what skills on the list.

Phase 2. Change

Briefing 2 - Design Principle 2

Design an organizational structure for implementation.

Reports and negotiation of final design if necessary

Phase 3. Practicalities

Briefing 3 - What Is Required to Make the Redesign Work

What other resources do we need, if any? (from the skills matrix)

What else needs to be done? (This may involve more work on action plans or an additional set of action plans.) (Emery M, 1999, p214-5).

At the end of the modified PDW, there is a session called ‘Next Steps’. In this session, they will work out what they want put into the report, who is to write it, when should a draft be circulated for checking before it goes out to the wider population, and how often they need to reconvene to report progress and solve problems if they arise.

Bringing the towns together

Because this is an ACT wide process, we cannot leave the designs at the level of individual towns. So after each of the towns has had their modified PDW, we need another event that reconvenes the whole. Therefore, at the end of the PDW, they need to select 3 of their members to attend a simple Unique Design. Step 1 would consist of a short report from each town on the action planning for those goals that are common to all towns. If there are particularly bright ideas coming from one or another group, they can ne picked up by the

others. Step 2 should be similarly brief reports from the PDWs, giving relevant details such as how often the groups will reconvene. Step 3 then becomes the question of a timetable for reporting progress and problem solving at the level of the ACT. Three hours would do for this UD.

The ACT government should also be invited to this event so that it can see not only the progress but also the energy and motivation with which the community is approaching the task. It should also be prepared to answer questions about the progress it is making on the goals the community may have passed over to it for implementation.

In summary

This plan to involve the people of the ACT in its sustainable future will lead to a revitalization of suburbs and towns, and the people generally, with an increase in energy levels, cooperation and creativity, and a decrease in maladaptive behaviours such as dissociation as more people recover their sense of belonging.

Territorians will jump at this chance as they have before (Emery M, 1974) and as usually happens with such operations, there will be spin offs in many directions. Once people are working in DP2 structures, they become highly motivated and energized, and bright ideas and collective action can spring up from anywhere. It will also produce a picture of the most desirable, achievable and sustainable ACT as agreed across the territory and a huge amount of action on the ground to bring that sustainable ACT into being.

Phase 2: Disaster preparedness

In Phase 2, the action shifts from mitigation to preparedness for future disasters. Because of the strategic locations of the State Emergency Service (SES) across the ACT and their special direct responsibilities for emergencies and disasters, and community education about them, they are the appropriate service on which to base disaster preparedness.

Relevant emergency organizations

State Emergency Services Agency. (ESA). The ESA consists of SES, Rural Fire Service and Bush Fire Council, Fire and Rescue, and Ambulance. Each has their own structure within government built on exactly the same model.

SES. The ACT State Emergency Service (ACTSES) is a volunteer emergency service organisation which gives immediate assistance to the community during emergencies and disasters. ACTSES volunteers provide emergency response to the community of the ACT 24 hours a day, seven days a week. There are about 200 volunteers at the moment.

The main function of the ACTSES is to undertake planning and response operations for storms and floods. ACTSES may also assist ambulance, fire and police services in dealing with a range of incidents or emergencies" (ACTSES, 2012).

There are seven units and depots scattered in a strategic fashion around the ACT (see crosses on the map). The ACTSES has also recently established a Community Education Team. "The team is responsible for developing educational material and to delivering community education presentations and discussions to the ACT community on behalf of the ACTSES. Such presentations may be made to special interest groups, schools and college students, members of the various Community Councils, and other groups as identified.

The Community Education Team also attend displays at shopping centres, employment fairs, festivals and fetes, and at other places identified as an opportunity to educate the community about any aspect of ACTSES business." (ACTSES, 2012).

There are seven permanent officers in the SES arranged into three levels of management and each unit has five levels of management from Commander and Deputy Commander down to 'Team members'. There are also six specialized jobs: Treasurer plus Administrative, OH&S, Training, Equipment and First Aid, Officers. While they are called 'team members', these individual members report to a Deputy Team Leader who reports to the Team Leader: this is an extreme example of a DP1 structure.

RFS. The Rural Fire Service has 8 depots and its management and support structure has 5 levels of management, its operational structure has 5 levels but its volunteer structure has only 2 (esa.act.gov.au/actfr, 2012). There are currently about 450 volunteers.

"The ACT Rural Fire Service (ACTRFS) is responsible for protecting life, property and the environment from all bush and grass fires that occur within rural areas or non-suburban of the ACT. The ACTRFS has both volunteer brigades and a brigade of TAMS employees who work together responding to bush and grass fires, and conducting hazard reduction burning to mitigate against the fire threat to the ACT" (esa.act.gov.au/actfr, 2012).

BFC. "On 13 September 2006, the Minister for Police and Emergency Services gave a Standing Reference to the ACT Bushfire Council, asking that the ACT Bushfire Council provide its advice to the Minister under Section 130 (1) of the Emergencies Act, 2004 by 1 November each year", on matters regarding rural fires (esa.act.gov.au/actfr, 2012). It also reviews and monitors the annual Bushfire Operations Plans.

Fire and Rescue (FR). FR has 9 stations in the ACT and provides a huge range of activities and specialist services for virtually any type of accident or emergency. ACTFR has 50 locations across the ACT. "Firefighters in the ACT provide many functions ranging from fire suppression to rescue capabilities to community safety activities. ACT Fire & Rescue is acknowledged as one of the most multi skilled fire and rescue capabilities in Australia" (esa.act.gov.au/actfr, 2012).They have a 3 level management structure and have volunteers organized into fire fighting units and the Community Fire Units (CFUs) initiated by residents after the 2003 firestorm as above.

Ambulance Service (ACTAS). ACTAS provides all ambulance services and also the aeromedical services for the ACT and surrounding SE region of NSW. They also conduct day to day management of the Snowy Hydro SouthCare helicopter. It has 4 levels of management with operations split into 4 divisions. It operates out of 7 stations.

Summary. In other words, despite the Coroner's documentation of the classic DP1 failings in 2003, the design principle has remained unchanged in all the units. Not only have the failings been documented in the ACT, exactly the same problems and failings have been documented in the reports of the 1983 Ash Wednesday and 2009 Black Saturday disasters. These failings are the result of the organizational structure, not the individuals, not the generation and not the state.

The indecision and procrastination, the bungling of response, the lack of coordination and communication, the claims of 'it wasn't my responsibility', and the overall lack of care for the outcome can be expected to continue, unless this structure is changed by changing the underlying design principle. If it is not, I can confidently predict that the next disaster will be handled in exactly the same way as the previous ones.

In addition to the ESA, there is the ACT Police which needs to coordinate with all other services in the event of emergencies and disasters. It too has a DP1 structure.

ACT Policing. ACT policing is a business unit within the Australian Federal Police as determined by an arrangement between the ACT and Commonwealth governments. It also is

a highly complex organization whose activities range from community policing to highly specialized functions. Needless to say, they also have a DP1 structure and suffer the same failures.

All but the ambulance service appears to have volunteers and in addition, there are other special units which are primarily volunteer: MAPS, the mapping and planning support unit which is a part of the RFS, and the Australian Emergency Management Volunteer Forum which is a national forum to represent the voluntary emergency management sector. Its purpose is to develop better communication between the organizations within it and to provide advocacy for the sector (ACT Government, Justice and Community Safety, 2012).

Phase 2 Part A – Search Conference and Participative Design Workshops for change of design principle in each unit

Choices

There are two different but interrelated pieces of work involved in enhancing disaster preparedness. One is that the individual units such as the SES need to participatively update plans for disaster preparedness and response and democratize themselves. This will look after the *internal* coordination problems. The other is the coming together of all the units involved in disasters to coordinate *between* the units.

I was then faced with the question of which should come first. If I put the *between* unit work first, I would have had to start with a joint SC followed by a modified PDW. This would have the advantage of easing these hierarchical organizations into DP2 gently through designing an effective, cooperative organization for implementation of the SC action plans.

However, because each unit would need a SC to update its plans, putting that option first would result in significant duplication. Also, putting members of a DP2 organization into a joint planning event would probably result in more efficient and higher quality work that if they came together as members of competitive structures. I have chosen, therefore, to put the *within* work first.

Each of the unit mentioned above needs to have a Search Conference (SC) followed by a series of Participative Design Workshops (PDWs) to change their design principle and establish these service organizations as cooperative, well coordinated, flexible and responsive units that will deal effectively with the future disasters that will inevitably come.

Preparation

There is preparation involved for both the SC and PDWs. Preparation for the SC involves the same sorts of work as discussed above. Preparation for the PDWs involves firstly a comprehensive education for both management and unions as to what a change of design principle is and what it means. I am assuming that this has happened and there has been agreement given to proceed. Then follows discussion and drawing up of an Enterprise Bargaining Agreement (EBA) to cover the change of design principle and the predictable consequences such as change of pay system to one based on pay for skills and knowledge held. This is the only equitable pay system found so far for DP2 structures. The practitioner can help at the beginning of this process by outlining the sort of matters that have found to be helpful to be included in the EBA but the process of negotiation and agreement is handled by the management and unions themselves.

At the same time, all employees need to be briefed about the process and content of the PDWs. This includes a presentation of the major concepts, all the steps involved and a report of progress on the EBA if applicable. A two hour meeting, about half of which is Q&A, is usually sufficient.

The practitioners then begin studying the org structure and designing the series of PDWs to get the job done. Then the PDWs begin.

SC for each unit

The system for the Search Conference is the future of disaster preparedness and response within the unit. This makes it an issue within an organizational SC. Some units such as ACT Policing already have strategic plans (ACT Police) so this will supplement these plans. It would also be an introduction to cooperative working within a DP2 structure.

Because it is an issue within an organizational SC, the Community Reference System needs to be used to select participants other than those at the top of the heap. The first criterion would, therefore, need to be a track record of being active and concerned about disaster preparedness and response. The ACT Police for example, have sections concerned with 'specialist response and security' and 'emergency management and planning' but as we saw in 2003, it was all police 'hands to the pump' and there is no doubt that the selfless and courageous actions of various police officers, as well as similarly extraordinary actions by other emergency services personnel, kept the loss of life and property to what it was, something the Coroner described as a "miracle" (Coroner's covering letter to the Attorney-General, 2006). Therefore, the selection of any members of all the services should be open to all.

The final selection should include volunteers in roughly the same ratio as in the total organization. It should also include people from such units as and the CFUs within the Fire and Rescue service. It is important that all the various dimensions of knowledge within every section of the unit are present at the Search, in other words, knowledge of every dimension of the system. It is also important that people in every section of the unit select their own people. This can be ensured by nominating one starting point person in each of the sections and units such as the Community Education Team within the SES and the BFC and MAPS group within the RFS.

The design for each of the 5 units plus the Police would look as follows:

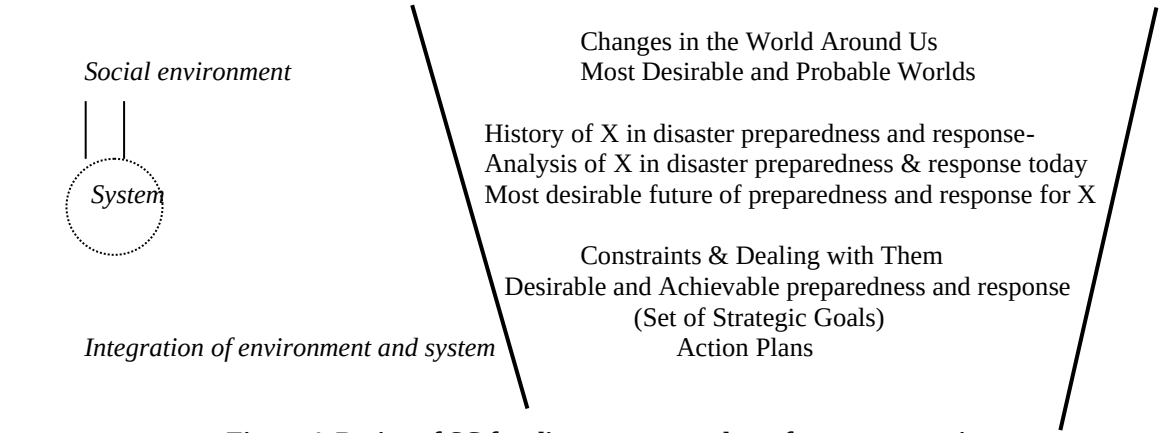


Figure 4. Design of SC for disaster preparedness for separate units

At the end of the SC, participants from each of the units will select 7 people to attend the Unique Design that will be held after the structures have been democratized. It is possible that this selection may be changed after a change of design principle but that is an internal matter best left to the individual units.

Once the SC is over and the groups are working on implementing their action plans, the work in preparing for the Participative Design Workshops (PDWs) begins. Strategic goals that cover the areas such as morale, motivation or coordination will not need implementing as these will automatically be covered by the change of design principle.

PDWs for each unit

The bottom level PDWs are held first and the management workshop is held last after all bottom-up designs are finalized. Its task is two fold. It has to design the management structure of the top 2 or 3 levels, and integrate it with the designs from the bottom levels, *without changing them*.

The basic design of the PDW for redesign is as follows:

Phase 1. Analysis

Briefing 1 - Design Principle 1 and its effects

Groups complete matrix for 6 psychological requirements of productive activity.

Groups complete matrix of skills available.

Reports and diagnostics.

Phase 2. Change

Briefing 2 - Design Principle 2 and its effects

Groups draw up work flow for information and learning.

Groups draw up organizational structure and redesign it.

Reports.

Phase 3. Practicalities

Briefing 3 - What Is Required to Make the Redesign Work

Groups spell out :

- a comprehensive set of measurable goals.
- essential training requirements for start up (from skills matrix).
- other requirements, e.g. mechanisms for coordination, changes in layout or technology, etc
- first draft of career paths based on pay for skills and knowledge.
- how the redesign improves scores on the 6 criteria.

The first phase is an analysis of what currently exists, phase two makes the change and phase three covers all of the practical matters which accompany the systematic change and ensure its effectiveness in practice.

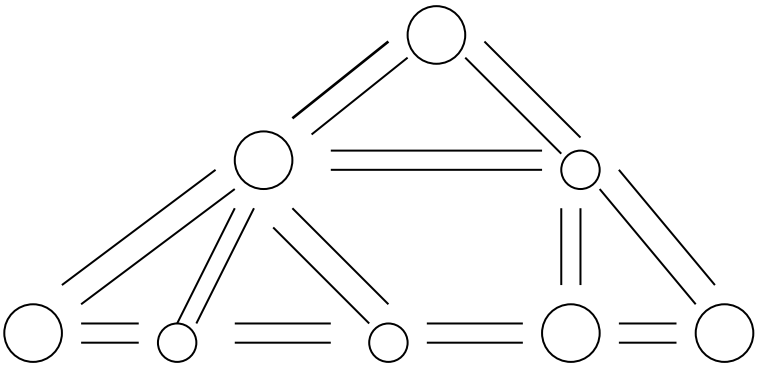
In phase 1, the PDW manager does a briefing on the 6 criteria, DP1 and its consequences. The participants then analyse the effects of the existing structure in terms of human motivation and current distribution of skills.

In phase 2, the manager covers DP2 and its consequences and the DP2 structures appropriate for multiskilled, specialist (Figure 2) and unstable work (Figure 6). Participants briefly draw up the workflow through their section of the organization to ensure that everyone knows what happens in the section as a whole and where critical decisions about control and coordination are made. They then draw up the formal legal structure of their section and redesign that structure. When they have the best possible DP2 structure, they move on to phase 3.

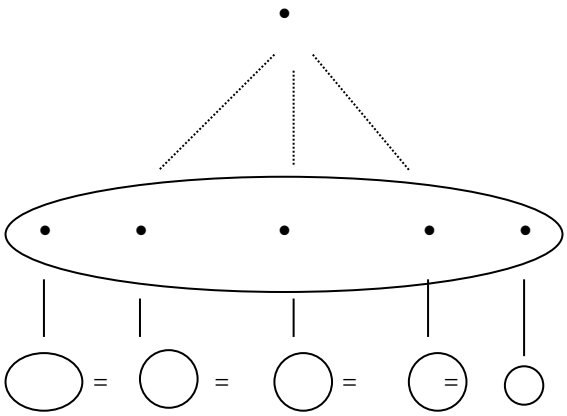
In phase 3 they do a first draft of the goals which will control the work of that section or the groups within it, work out their detailed training requirements and anything else required to make the new structure work in practice. They also do a first draft of a new career path based on skills as it would apply to them in their work. These drafts are later negotiated and a

final career path based on payment for skills will be designed by a professional career path designer.

The final system design will be individual to the organization and its people. It will be a variation on some mixture of basic models (Figure 6).



Large organisation with non specialized people at strategic level



Small to medium-sized organization with specialized people at strategic level

One Level organization

Whole organization is decision making
Body composed of temporary overlapping project teams

Small so called 'knowledge work' organization

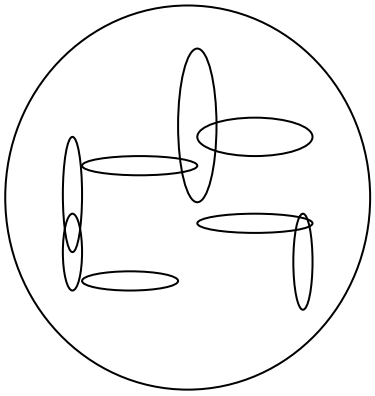


Figure 5. Variations in DP2 Systems

Phase 2 Part B - Coordination across the units

About 6 months after the PDWs have finished, the final stage of the project can begin. This time period allows for about the maximum time required for essential training before start up (3 months) and 3 months for a settling in of DP2 working. Those sections that had no essential training requirements would have 6 months settling in.

The final phase 2B is to achieve effective coordination between all units involved in disaster preparedness and response. As above, to avoid duplication, all we need is a Unique Design that covers just the steps necessary to achieve effective coordination of response when the disaster appears. I have used 'appears' rather than 'happens' because as we saw in 2003, it was predictable days in advance that a catastrophe was possible if not probable and the coordination could have started with contingency planning long before 18th January. In fact, it should routinely happen in any case of a series of 'fire days', heavy downpours or predictions of severe storms.

The Unique Design looks as follows:

- Task environment – the planet (changes over the last 10 or so years)
- Implications for us
- History of coordination in disaster response
- Analysis of state of coordination today
- Most desirable state of coordination
- Action plans
- Next steps

This process should take about one and a half days. The action planning should put a special emphasis on mechanisms for coordination as this is the core of the problems that consistently appear. I'm sure it will as the problem will have become obvious from their history and analysis sessions. Once these members have made their plans they take them back to their respective units and as these units are now based on DP2, they will swing into action. Similarly, the timetable for progress reports determined in the 'next steps' session will be followed and as the units continue to work together and members get to know each other through various cooperative ventures such as possible joint training initiatives as new technology comes in, the relationships will strengthen and deepen.

We may well see new projects such as bringing the various community education units together with the groups implementing the community based sustainability initiatives to plan ACT wide campaigns that have the potential to spin off more groups making more action and generating more bright ideas. When people are working in the creative working mode, innovation is common and people recognize bright ideas when they see them. We can expect some brilliant new initiatives which can only add to the spiral of energy and action that this plan will unleash.

Conclusion

The combination of Parts 1 and 2 of this plan meets the IPCC's conclusion that "effective risk communication builds on exchanging, sharing, and integrating knowledge about climate-

related risks among all stakeholder groups" (2012, p15). Indeed it goes further as citizens, officials and government are working in a coordinated manner to create a safer future.

The plan is an example of the fact that "Progress toward resilient and sustainable development in the context of changing climate extremes can benefit from questioning assumptions and paradigms and stimulating innovation to encourage new patterns of response…(It) involves broad participation in strategy development, the capacity to combine multiple perspectives, and contrasting ways of organizing social relations" (IPCC, 2012, p18).

Although this plan deals only with the small jurisdiction of the ACT, it is amenable to adaptation to any size and type of system. This plan will take less than a year to execute in the ACT with one or two designers and managers and with plenty of trained up practitioners, virtually any size system can be done expeditiously.

Our weddedness to DP1 has landed us not only with a climate crisis but also the inability to deal with it. "Cooperation is the law of life" (Gorney, 1968) and we have ignored that fundamental law. We have put ourselves above the planet in the same way that we attempt to put ourselves above others in the DP1 rat race. Now we pay the price. The only way to cut through this mess is to change the genotypical cause. This proposal changes:

- Organizations from DP1 to DP2; from competition to cooperation
- Our relationship with the planet from domination and ripoff to cooperation and working within her laws
- The relationship between people and representative government from subordination and dependency to a more equal and cooperative one
- The 'community' from an aggregate of individuals and families to genuine cohesive, cooperative communities
- The balance from maladaptions towards active adaption

What this means is that we may have a better chance of saving the commons, the Earth, which is at risk. We cannot take that risk. We must restore DP2 in every aspect of our lives and that includes our relationship with the planet.

Only strong communities can put enough pressure on our current representative governments and the UN to make the changes we need. It is not the whole answer but it is a start.

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