Joining the dots. Notes on the Linkages between Sustainable cities, Action Research, complexity and technology.

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A recent letter writer to the (March 2010)Guardian Weekly expressed a vision for the future that many of it's readers (educated, technically proficient, inquisitive) would probably be happy enough to adopt. "There's general agreement on the destination: a planet where all sentient beings can grow, work, play, create, eat, shit and sleep in perpetuity and safety". The writer then stated that the big problem is that we don't know how to get there. As we live in an age where if you don't have a plan - you plan to fail, this is not a good situation. A significant problem is that the vision lies externally to any specific product or service, and our dominant level of consciousness can only conceptualise planning to achieve sophisticated products and services. To achieve the vision requires a different level of problem solving to that which we are used to. To explain this I will use the contemporary city that we live in (as imagined as that great jumble of products from shacks to railways to high rise offices) as a focus.

I will first outline what I see as some of the inhibiting factors to achieving the vision. I will then look at the issue of complexity and how that links with Spiral Dynamics and Action Research. Finally I will provide some strategies to achieve the desired outcomes and some practical direct actions.

When thinking about a possible direction to reach this vision, I feel that amongst all the multitude of barriers, there are four significant ones:

- To date, the process of modernity has in fact delivered (and continues to deliver) the goods for many.
- We limit our vision of the city by the parameters of what currently exist.
- It is in the nature of change that it is those who have the most to lose from a change in the status quo that most resist change.
- Most inhibitors to achieving the vision are within the system itself, and not resolvable by traditional means.

Up until recently modern culture has actually worked extremely well. There are more people living on the planet today than have ever lived before, and those that are alive are living longer and healthier lives. Thus modern cities comprise a huge paradox. On the one hand they have been at the centre in achieving the current state and on the other are, in their current form, absurdly inefficient and completely unsustainable. Not to mention often ugly and uncomfortable. At the same time contemporary cities truly reflect and accommodate complexity. For cities are not just a collection of things like rapid transit systems, ipods, factories and suburban houses but also comprise of individual people with networks and relationships.

In his 1966 Domus article, The City is Not a Tree (Alexander 1965), Christopher Alexander explained why it is not possible to purposefully create a city. His thesis is that the human mind can only manage to conceptualise complicated projects (like a tree, with roots and branches), not complexity itself. This

is a similar concept to Rittell and Webbers article (Rittell and Webber 1973), Dilemmas in a General Theory of Planning. Rittell and Webber observed that problems in outputs (products) are essentially 'tame' and solvable, whilst many of the problems confronting us today (depression, domestic violence, angry police, disengaged teenagers) are 'wicked'. Wicked meaning that there is no one answer, no eureka moment when the problem can be deemed 'mission accomplished' for they exist within the people part of the city, not the product part. Their thesis is that these problems are not solvable by using the practices used to solve 'tame' problems.

Fig 1. Modern cities don't look like a giant building because we are not ants.

Wicked problems are the undesirable outcomes (or results) of real tangible events and products, not tangible products and services themselves. Due to the linkage between creating improved products and services and the positive outcomes that have historically been achieved, it is understandable that there is considerable reason to support a strategy of more of the same. There is also considerable evidence to suggest that this might be erroneous, just because something worked in the past doesn't mean that it is valid for today. If the horse is dead, get off it.

In a recent presentation to the Melbourne complex processes research group, John Stewart presented a paper proposing that the people part of the city are currently going through an evolutionary shift something akin to which occurred at the age of enlightenment. This was a time when there was a shift in general consciousness from being in 'Association' with the landscape to one where Abstract Rational Thought gained dominance. This time though it is a consciousness shift from Abstract Rational Thought to what he terms Systemic Cognition. Key characteristics of Abstract Rational Thought are the capacity to visualise an improved state, plan to achieve that state, take risks and learn from mistakes. These characteristics are, to varying degrees, shared by three attributes of modernity; action research, entrepreneurialism and the concept of design as a process.

As a theory, there are similarities to Spiral Dynamics (Cowan and Beck 1996), which outlines nine levels of consciousness in two groups. Of significance is that both Stewart and Cowan and Beck maintain that it is not possible to 'leap frog' from one level of consciousness to another, but must work through each level. It is also significant that it is estimated that 70% of the US currently exists at the level of Association. In other words, the model of progress and development epitomised by the idea of carrying out complicated projects in a spirit of entrepreneurialism is actually only realised by a minority of the population, the majority of the worlds most developed nation being bit players dominated by the exigencies of their particular situation.

Excepting those that have become rich and powerful through inheritance or luck, the primary (legal) beneficiaries of contemporary cities are those that have the greatest capacity to undertake Abstract Rational Thought. Those that have the capacity to carry out complicated tasks such as designing or constructing rapid transport systems, high rise buildings, complicated pieces of policy and intricate financial products by and large find the city not a bad place to be. But it is not just having access to reasonable schools, the ability to own a nice enough house with a smart enough car and the occasional overseas holiday and ski trip that makes the modern city a relatively pleasant place for the members of this group. It is also the work itself and the relationships developed in creating these complicated projects that provides personal challenge and growth.

The psychologist and facilitator Sam Kaner (Kaner 1996) uses the diverge/converge model to describe the problem solving process for creating products. At one level the model describes the technical process of doing wide ranging research (diverge) followed by a process to develop a conclusion or decision (converge). Of more importance is the 'groan zone' that occurs in the middle. Irvine Stone titled his biographical novel of Michaelangelo 'The Agony and the Ecstasy' which as a title describes this difficult part in the middle that a creative person goes through to synthesise a wide variety of criteria into a product that is both 'good enough' and transcendental. Whilst uncomfortable and challenging, it is going through this part of the decision making process that creates transformation and learning.

As a psychologist, Kaner goes further to say that real personal transformation occurs when individuals have to work together, express their own values and listen to others and truly collaborate to develop a mutually agreeable synthesis to a problem. Robert Puttenham (Putnam 2000) describes the value in the sort of linkages that occur when people work together to solve common problems as social capital. An effective and resilient community that comprises of effective and productive individuals is one that has high levels of social capital. As individuals within a group, professionals display high levels of social capital.

Thus currently it is the technical professionals with considerable capacity to create the outputs (products) that form the elements of a modern developed city who are also the ones with considerable stake in the city comprising these products. At a simplistic level it is the road engineer who has a relatively good life in the city, but is dependent for every day work on the city having the kinds of roads that he/she is highly capable of designing and building. More removed, but within the same paradigm is the public servant who needs the road, the car, the train to commute every day to develop with other professional staff a new policy on an aging society. For all these professionals it is personally rewarding to be part of a team or organisation that is required to make a product that each time can be a little more sophisticated, a little more complicated, more perfect than it's predecessor. This is the nature of action research/learning and this group of people are best able to experience it.

Whilst there is historical rationale for mass production and large scale developments, the unexpected outcome is to restrict the opportunities for action learning. Those trained to deliver large scale projects and complicated products have the most opportunity to do so, and also benefit the most from the aggregate of these products as they have become more sophisticated over time. Whilst there is no

shortage of Organisational Development experience and literature that demonstrates that by enabling staff have capacity in decision making results in efficiencies and effectiveness within an organisation. We need to take the conceptual leap and take these learnings into the broader system.

Fig 2: It was the cholera and plague epidemics that effected all classes that drove modern public health improvements. These developments also changed what we see as 'normal'.

Unfortunately the value of each of the incremental advances in the individual products made by the professionals are providing diminishing returns to the system as a whole, both environmentally and socially. New, more efficient cars might travel on safer roads (complying with a new more sophisticated construction policy) to travel to a smarter office to service houses with higher energy ratings - but real change is being inhibited because the presumption is that these are the components of a modern, progressive city. To take a complex systems approach to transforming the city into something that supports and enhances the system itself requires not envisaging a different city, but a different understanding of the value of the city, and how that will result in a different city. For it is the nature of cities to be a reflection of complexity, not a finite product in itself. What this creates is a tension around our thinking, especially for those who are good at Abstract Rational Thought, even when aware of the need to operate at a systemic level. What is required is a circuit breaker.

The nature of complexity is that there is no one right answer, thus the circuit breaker might come from anywhere. Possible directions might include:

- environmental and social upheaval,
- new technologies
- changes in approach by development professionals.

Fig 3: Though nothing wrong with the products themselves, Pruitt Igoe was demolished because of its effect on the broader system. This was a learning experience for housing professionals who changed the product, but the idea of social housing still remains.

Historically, it is a combination of these that have lead to change. Reaction to forced change is common. It was the plague and cholera epidemics of the 16th-19th Centuries that drove public health developments including the great water and sewage engineering feats. Climate change induced disasters and social unrest due to un-realised expectations are possible catalysts. Likewise just as the new technologies of printing and the railways resulted in significant change in what people do, and how they do it, the digital revolution will in turn have it's effect on how we perceive the world and the city. There has also been a history of change being driven through rational innovation by those with the desire to achieve the desired vision. For those with the desire or willingness to do things differently, there is a growing body of examples on which to base the kind of incremental change needed within the system itself,

rather than just the immediate program or product. Paradoxically the strategy to achieve the kind of results that we are looking for can be found in the processes that have served the technical professionals so well.

Current educational philosophy places high credence on the capacity for 'on the job learning' to enable individual development. Princeton University bases all it's learning program on the 70/20/10 principle (Michael M. Lombardo), in which it is said that seventy percent of learning occurs 'on the job', twenty percent through coaching or mentoring, and a mere ten percent through traditional teaching. This correlates with investigations on how professionals learn (Schön 1995). What this presumes though is that the person is in a job that allows learning opportunities. For every designer/ manager/entrepreneur there are many others who 'have to do a job'. As my son laments 'Do you realise how boring it is to have to stack the same supermarket shelves, with the same products, every shift?' For most the only way out is to become a technical expert, and fortunately for him his parents can probably enable him to become a technical professional. For others, the opportunities for control and choice, taking risks and making decisions in collaboration with others are severely restricted. There are though ways in which those that have a high capacity in ART can modify how they approach the creation of their products and services to benefit the system as a whole.

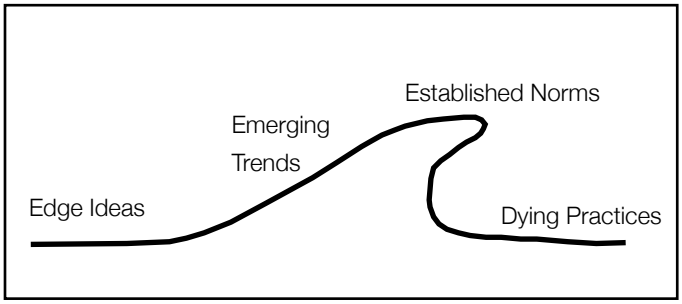

Fig 4 The 'Wave Diagram' illustrates the modern culture of change applicable to all areas of endeavour

What is required is a different level of thinking to the problem, one in which those with the skills at creating complicated projects and programs use those skills to enable a broader strengthening in the system itself. This different way of looking at development can be illustrated through the Wave Diagram (Fig 4). For every specialist area of endeavour, from car design through cooking to the writing of legal documents, there are at any given moment in time Dying Practices, Established Norms, Emerging Trends and Edge Ideas. If the same concept is applied to the decision making process that relates to such products and services, there is currently another dynamic at work. This is where those with the power might previously have 'just done it', this way of operating is becoming a dying practice. It is now expected practice for 'consultation' with those that will be effected by the decision to be carried out prior to implementation (Fig 5). The

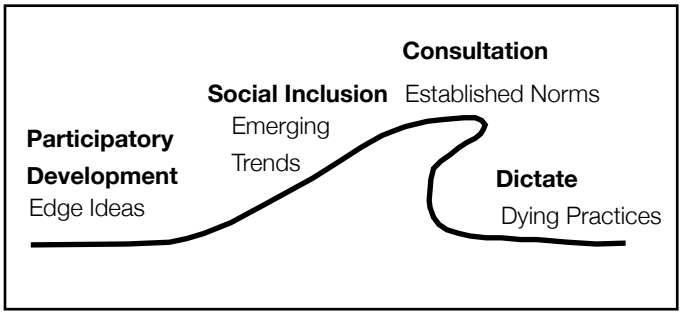

Fig 5: Decision making processes are also going through a process of change. It is no longer acceptable for those with power to simply mandate change as they see fit.

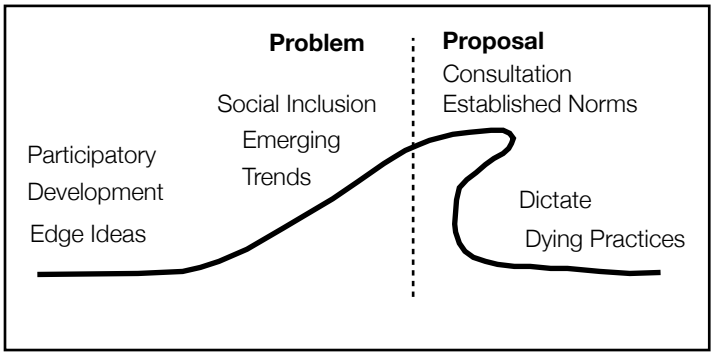

Fig 6: Enabling others to be involved in the problem solving process itself.

more important shift that will genuinely increase the learning capacity of those that will be effected by any decision is to be engaged in the solving the problem, not just commenting on proposed or suggested solutions (Fig 6).

This process of enabling others to be part of developing the solutions to problems can be in one of two approaches. The first is in actively enabling others to be part of large scale conversations on matters that will effect large numbers of people. The second is to actively break up projects, programs and even policies so that those particularly affected by either a detail or within a geographic area have greater control and choice in that particular element.

Considering the first; enabling people to be actively engaged in the policies that will effect them. Considerable opportunities exist at a policy development level for change. Lynne Carson has demonstrated with tools such as Citizens Juries that when provided with good quality information, randomly selected people can make just as good decisions around complex topics as technical experts. A significant outcome from all these demonstrations is that those involved on such juries have described high levels of personal growth and increased understanding not just of the topic, but of complexity itself. Sweden has around sixty institutionalised study circles comprising broad sectors of the community. Prior to making policy decisions on complex topics, unbiased information from a wide variety of sources is made available to these study circles. Over a period of weeks, members read and deliberate the information prior to making their recommendations. Such widespread engagement in complex topics minimises political risks, and provides opportunities for members of the broader public to participate in real dilemmas requiring abstract rationale thinking.

By moving the emphasis from designing the policy itself, to designing the process in which multiple stakeholders can effectively consider and deliberate the problem and collaboratively develop the policy becomes the new challenge. Policy experts with a desire to positively effect the broader system could advocate for broad scale dialogue and deliberation on complex topics such as climate change policies, education, immigration, health and taxation.

Current urban planning legislation with its statutory consultation period is essentially adversarial, with the definition of ‘consultation’ to be ‘We the decision makers with the power to implement decisions have a proposal, and we’ll let you comment on it, though we’d prefer you to unreservedly support it’. In contrast the 2005 Perth structural plan was developed over three days with 1300 participants in a forum designed and implemented by America Speaks. This process allowed broad scale input, dialogue and deliberation to how the city’s expansion should occur, providing an agreed framework for development to occur.

There are many opportunities for project managers to further the development of the system itself through modifying the design and approach to specific capital works projects. Breaking complicated projects down into smaller sub-sets is already common, but can be extrapolated further and more deliberately as a policy to

Never before in human history have so many people had so much control and choice in their built environment. World Bank funded housing programs emphasise people gaining land ownership and access to loans to construct housing that they can afford. This provides not just good quality affordable housing, but the opportunity for people to make decisions and learn.

enable greater learning opportunities within the built environment itself. By breaking a Government housing project of 50 houses into five smaller projects, I provided five smaller contractors the opportunity to be entrepreneurial, and spread the risk of failure.

Designing individual houses to be solar efficient and effectively laid out is not rocket science. It does though require design training and the opportunity to practice. Advocating for more design training to be available and ensuring that there continues to be opportunities for practice on small scale, relatively simple projects will provide the kind of real learning opportunities required for transformation within the system itself. Almost all great architects commenced their career designing suburban houses.

Within the arena of urban design there is also ample potential for the design and creation of public open spaces to be the focus of dialogue, deliberation and action learning. Engagement in urban design can easily be used to manipulate acceptance of a particular conceptual frame, but it could be a powerful tool in developing social capital and strengthening the system as a whole. Reframing urban design problems as an opportunity for those residents and current users that have a stake in the solution to be involved in a process of dialogue and deliberation as the design challenge would have a greater impact on the system as a whole. Handled well, it will contribute considerably to developing trust and understanding across cultural preconceptions, building social capital in all its forms.

In conclusion, to achieve the goals set out by the Guardian reader will not be through creating better or more products in themselves, but through enabling people to work out the solutions to their particular problems through processes that allow them to create the products that they can reflect on and learn from. Our current conceptualisation of the city is of a defined set of components requiring ever more sophistication to cope with increased demands. If those with a high capacity for Abstract Rational Thought wish to strengthen the system as a whole, it requires reconceptualising the city from being an artifact to being a reflection of complexity. Thus as we all need shelter, food and places to communicate with each other, the city fabric itself could also be more effectively used to provide opportunities for individuals to be involved in the problem solving process itself. In other words, the city can be more than just a reflection of complexity, it can also be a powerful focus to enable change within the broader system itself.

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