

THE NATURE OF CHANGE: UNDERSTANDING NEEDED FOR CHANGE MAKERS

John Croft

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ABSTRACT: *Building the bridge from Dreaming to Planning involves crossing thresholds of immense difficulty. This describes some processes that can be useful in building the bridge necessary. This article presents examines the nature of change itself. It shows the steps through which change occurs and helps change makers understand better how to preserve changes that are made, how to overcome the forgetting curve and how changes that occur in the world can be recognised. It equips change makers with a powerful tool they can use in their projects.*

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BUILDING A NEW KIND OF PROJECT

Which brings me back to the first question above. How do you make your own, or other people's dreams come true? Leadership is often required in order to get things happening that have never happened before. Everywhere there is a gap between how things are and what they might become. Many people turn towards their "leaders" for solutions. It may seem that effective leadership is merely a question of bridging this gap, of building a bridge, that enabling others to come to work together with the leader to achieve their own or the group's vision. But leadership dependency results often in passivity, and as people wait for our leaders, in government, in industry or in our communities to make the changes we want or see that are necessary, things go from bad to worse. The recent Copenhagen Summit on Climate Change is a classic example. Despite the urgency of finding solutions, despite the agreement that something needed to be done to get the world's level of carbon dioxide to below 350 parts per million, in order to stabilize climate within the limits that had allowed human civilisation to develop, nothing happened. Leaders were paralysed in old paradigm thinking about competing national interest. Business leaders say they can do nothing unless there is a regulatory framework or a market for their products. Looking always to others to provide us with the answers to our problems seems not to work nowadays. We need a new approach, a new paradigm. At Copenhagen it was clear we could not look to business or political leaders. Instead we need community, as it is often said "When the people lead, the leaders will follow". And "we are the people we have been waiting for"!

This is what the process of project building using Dragon Dreaming is all about.

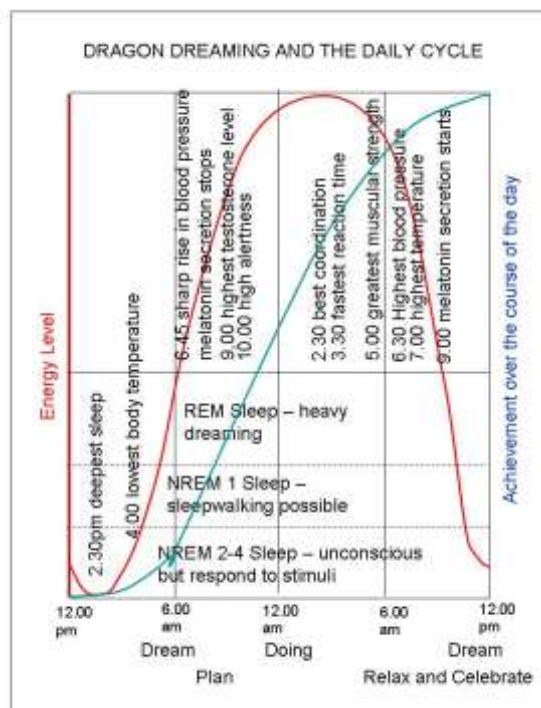
Looking at the results for most community projects can often tend to be pretty depressing. A study completed 16 years ago in Western Australia, as elsewhere around the world, seemed to show that 90% of small projects that get done usually fail to last longer than 3 years. The people involved often become stressed, burned out and vow never to get involved in anything like this again. But it need not be that way. There is an alternative pathway.

This method of Dragon Dreaming is about running outrageously successful projects. But first what is a "project"?

Normally people think of a project as some special activity, outside of normal everyday life. But this is far from true. The Project Management Institute, for example defines a project "as any temporary endeavour undertaken to achieve a particular aim ... regardless of the project's size, budget, or timeline." In Dragon Dreaming a project is defined as any planned undertaking designed to achieve a goal of specified results within a given time.

This definition comes close to defining any intended human activity as "a project", and in a very real sense this is true. Think of a typical day. You start the day asleep, the state of consciousness as close to death as one can be in a normal life. Brain activity is reduced to a minimum, although even asleep you are processing information you receive from your environment, as any parent awakened by the distressing cry of a disturbed child could tell you. Sleep comes in various states, usually described as "Dream" or "Rapid Eye Movement" (REM) sleep, and Non-Rapid-Eye-Movement (NREM) sleep, associated with a deeper unconsciousness, in which self awareness is totally suspended.

You then awaken, perhaps with the memory of one of the last of the 6-7 dreams you have had during the night, ready to start the day. Your dream may colour the first hours of the day. In that state just awoken, the part of the brain just below the motor cortex, where you plan your daily strategies becomes more active, and you arise with a number of activities in mind, intending to coordinate your actions to achieve these goals. Further plans get incubated during the course of the day as your activity and attention levels rise to peak between 10am and 2pm, with your reflexes staying fast until late in the afternoon. As evening approaches you begin to slow down, and you need to relax for longer periods, and by night, as the melanin levels of your brain increase, so your ability to keep yourself awake is diminished, and the day ends, as it began, with sleep. The level of activity over the course of the day is shown by the red line to the right. Your cumulative achievements are shown by the blue-green line.

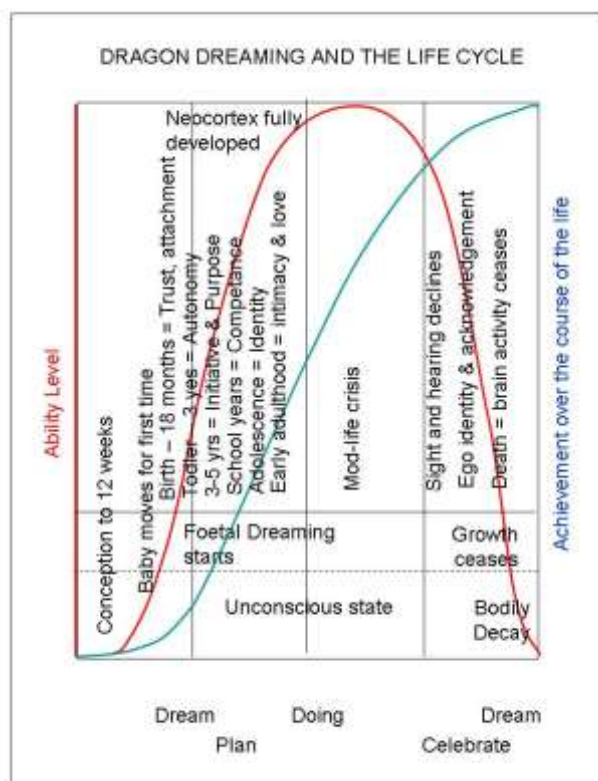


This pattern of the rise and fall in energy expended mirrors the nature of any sustainable project, with the energy at the start and end of a project being lowest, whilst the energy required in the middle of a project is highest. Just as the achievements over the course of a day rise slowly at first, to accelerate in the middle of the day and then rise again only slowly in the evening, so this too reflects the nature of the achievements over the course of your project. In a real sense, therefore, the typical activities over the course of a day could be considered “a project”.

A similar pattern is found not just from day to day but over the course of your lifetime. In this way your life, from birth to death could be considered a single project, as you discover your purpose in life, work towards its fulfillment and then, in the evening of your life, harvest the fruits of the crops that you have planted.

Thus each day of your life could be considered a separate project, and at the same you’re your life

itself can be seen the same way. Whole cultures and civilisations too pass through a similar pattern, germinating in the lives of their initiating generations, growing rapidly towards their climax, and then declining, in later times, but contributing as a whole to the unfolding nature of future human cultures. Generally such “multigenerational projects” happen in exceptional circumstances, but may be more common than we think. For example the social, political, technological, scientific, and economic revolutions associated with the western world of the Industrial Revolution comprise such a multigenerational project. The transitional shift from an industrial growth society to a life sustaining society, what Joanna Macy and David Korten have called “The Great Turning”, is according to Dragon Dreaming method probably the central most important project of our times. However, most projects upon which we are engaged are not considered to be multigenerational. They are usually longer than one day, but shorter than our lifetime, and although most projects will involve multiple people, they will not be as long as multiple generations.



The fact that we human beings have “aims” or “intentions” is one of the defining characteristics of us as individuals, and of our species. It helps us define what we mean by human consciousness. While conscious awareness is considered to be the internal monitoring of one’s own states of mind, this does not occur in a vacuum. Conscious awareness is shaped by our own internally modeling of the world, creating a representation of what we think it is. This model is based, in part, upon past experiences but it is also shaped by one’s intention. Intentionality has to do with what the state of mind is engaged upon, and together with consciousness, determines what it is to have a mind. Intention helps shape what we pay attention to, and how we gather new information, which reflects back upon the models of the world we build and live our lives by. So in this way, to be human is to jointly create collaborative projects, and projects in turn help create who and what we are.

THE NATURE OF CHANGE

How do we explain the nature of change? How does change happen and how do we account what happens when things change?

Richard Feynman in his Feynman diagrams, enabled us to see the nature of change within the space time continuum, of changes at the smallest level of quantum physics. Two interacting particles interact with each other through the exchange of quantum “gauge” particles, which provide the transformative process, connecting the influence of the first upon the second.

This provided me with the source of my second understanding while hitchhiking. As Galileo is reputed to have said under his breath, when tried for the heresy of proposing that the Earth was another planet moving around the sun “Epure si muove” (Nevertheless it moves), so I realised that, like the quantum particles, everything in existence is in transition between what it is now and what it may become. Sometimes the gap between the two is narrow and easy to secure. In other circumstances the gap is wide and difficult to cross. But if this is so, how do we understand change and even more importantly, how do we use this understanding to make things change for the better. It is said that

People only change when they see that the pain of changing is seen to be less than the pain of staying the same.

To get people to change, therefore requires us to do one of three things

1. Increase the pain of staying the same (a risky business and highly manipulative)

2. Reduce the pain of changing
3. Increase awareness of the situation they find themselves in

Often we are confronted with changes that are undesirable – changes resulting in the destruction of our environment or of our culture, the establishment of exploitative systems, or increased violence or the dehumanisation of important groups of people. These forces, acting all around us, increase the pain of staying the same anyway, but they may be invisible to us. But like all change, these negative changes too only occur because we let them; they occur because either by our action or our inaction, when faced by the changing forces of the world around us, we let these negative changes happen, or through our apathy we continue to allow them to occur.

Dragon Dreaming is all about creating desirable changes, changes that result in personal growth and empowerment, strengthening and building supportive and caring communities and increasing service to the earth, encouraging the flourishing and wellbeing of life itself. Such positive changes only occur because of the fact that the forces promoting such positive change are greater than the forces leading to their disappearance. This balance between the desirable factors promoting the change, and those forces leading to the disappearance determines the rate of change (r), which will lead to the spread of new ideas or behaviours and their adoption within your community.

Considering this factor is an important step in gathering information that allows us to build the connecting bridge from the Dreaming process of Dragon Dreaming to the Planning process. But How do we build a connection into the planning from the Dreaming Circle? It can sometimes seem a big step to take and the chasm may seem a little daunting, especially once the euphoria and enthusiasm generated by the dreaming circle has had the chance to wear off a little. The Dreaming Circle too will generate a huge range of divergent ideas. How do we know which to pursue first to make 100% of these ideas come true? It requires us to go through a process of convergence, narrowing the work to what is manageable.

There are a number of processes which can help here. To move from the Dreaming processes of “Perceiving Newly” to the Planning processes of “Thinking Globally” requires a shift in perspective, and a better understanding of the context in which you will be working. A CommunityWise Sustainability Audit of your community, conducted at various scales either early or later in the process will help you understand the degree to which your community is sustainable and how the local system works, but this is only part of the process. Gathering information about the sustainability of your community will help you shape the direction of your project, but we also need information on the “force field” in which your project will be operating on. What are the forces already operating which will help or hinder your project? Many planners speak of the SWOT Analysis, where SWOT stands for “Strengths”, “Weaknesses”, “Opportunities” and Threats”, where Strengths and Weaknesses are a consideration of factors internal to the organisation, and opportunities and threats are external. In the case here one aims to capitalise on the strengths and minimise the weaknesses and the threats. Personally I have found in cases of small new projects, it is better to collapse the Weaknesses and Threats into one category called “Hinderances” as well to collapse the Strengths and Opportunities into one category called

	PROJECT OR ORGANISATIONAL DIMENSION	
	INTERNAL	EXTERNAL
NEGATIVE FACTORS	POSITIVE FACTORS	STRENGTHS Within your project or organisation that could help achieve its goals and objectives
	NEGATIVE FACTORS	WEAKNESSES Of your project or organisation that would hinder the achievement of its goals and objectives
		OPPORTUNITIES In the environment of your project or organisation that could help achieve its goals and objectives
		THREATS In the environment that could hinder the project or organisation from achieving of its goals and objectives

THE NATURE OF A SWOT ANALYSIS

“Helps”. This enables the examination of the forces promoting and working against change to be examined as a whole system. This is also the view of Fred Emery the founder of the “Search” Conferencing methods.

As such, by considering those factors internal and external that provide assistance to a project as well as those factors which provide an impediment, we can examine the “field of forces” in which an intended project may have to operate. The procedure is built upon the collective wisdom of the group, and harnesses the “processwork” principle of “deep democracy” in which all viewpoints in effecting a group, project or organisation are valued. This principle also recognizes the importance of secondary processes of all sorts including, but not limited to dissent, hopeful dreams, and deepest beliefs. It is up to the facilitator of the group process to make space for these viewpoints to emerge and interact.

EXPLORING THE FORCE-FIELD

There are a number of ways in which a force field can be explored. The one I prefer is to get people moving back and forth so that they can become aware of and feel the force field as it emerges within their bodies. Analysing forces somatically rather than conceptually activates often subconscious factors that may otherwise be overlooked. Thus for example a gathering sense of dread may be associated with a particular hindering “force” that is often barely recognised, and may be difficult to name.

The way to conduct such a force-field analysis is to create within a space where the balance of forces affecting a group can be explored. About forty five minutes to an hour is required for the exercise.

A room or a field is marked with three boundaries. The central position is considered to be neutral and has a score of zero. A second boundary is considered to mark the position of the most positive force and has a score of plus ten. The third boundary is the most negative of possible forces and has a score of minus ten. It is important to explain that the scores are only for the present situation, not for the changes that could be made in the future. Once the field is marked out and the various possible scores between plus and minus are illustrated, the participants are then given a stack of “post it” notes (if working on a smooth floor) or of small pieces of paper and pegs or pins, if working out of doors.

Participants then are free to move back and forth between the most negative position to the most positive one. When they arrive at a position along the continuum between the most positive and negative that is linked in their mind to some identified factor that could help or hinder their group, project or organisation, they write it down on a piece of paper together with the score they have given it and post or pin it to the ground. They then move on – continuing in the same direction, until they identify the next factor. People are encouraged to stop at the neutral line when they have run out of ideas.

Generally after about twenty to twenty five minutes people will probably begin to gather on the neutral line having identified all the factors they can. At this point they can move out to read the factors identified by others in the group. Often they may find that a factor they have identified as important is also identified by another, but it may be given a different score. By this time it is not uncommon that a number of people may have identified the same force factors. If this is the case, place them in the same line and join them. I often use a piece of string cut to the correct length to indicate the range of values that people have given to them. For example a negative force may have been given a minus three a minus four and a minus seven score by three different people. In this case show the range of values for all scores, as different score positions are possible depending upon one's perspective, skills and abilities, and the degree of accuracy in the information one may have.

Now one can transfer the post-it notes or pegged messages to a large sheet of flip chart paper, divided in half with a neutral line - the top of the sheet indicating the positive forces and the bottom of the sheet indicating the negative forces. A line joins factors that are identical but have different

Factor 1 -7	
Factor 2 -5	
Factor 4 -9	Factor 3 +7
	Factor 5 +6
	Factor 6 +8
Factor 9, -5, -3 and -1	Factor 10 +4, +5 and +6

-10
0
+10

Total negative score =

$$-7 + -5 + -9 + (-5 + -3 + -1)/3$$

= -24

Total positive score =

$$7 + 6 + 8 + (4+5+6)/3$$

= +25

TOTAL SCORE = 25-24 = 1

The balance of forces helping your project and hindering your project are roughly equal before we consider what forces can be changed as a result of our actions

values. In the example left, for instance factor 1 has been scored at -7, factor 2 at -5, and factor 3 at +7. Factor 9, has been identified 3 times by three different people, and scored differently at -5, -3 and -1.

Once all the notes have been copied and their respective scores entered, a "balance of forces" may now be calculated by totalling up the positive helping factors and deducting the total negative factors. For factors that have been identified more than once, it is a good idea to pick a middle value for its score. Thus in the example shown left, factor 9 would be scored at 3.

This balance of forces is useful in a project as it helps to show whether if left alone, the situation of the environment is likely to change in the direction wanted or not, and what, if left alone, the rate of change (r) could possibly be. High scores in a positive direction indicate that the project could be

achieved fairly easily. Negative scores indicate extra work is needed. Before doing this, however, it is important to explain to people that they will have a visceral reaction to the scores, a feeling that when added that the score is somehow "feeling right" or is in fact a distortion of the reality. If the latter, it usually is an indication that some important factor has been overlooked.

A recent force field analysis conducted for the Patrimônio Matutu in Brazil's Minas Gerais for example, produced 26 factors, 10 which were thought to hinder the project and 16 that could help the project. Five of the ten factors had been identified more than once and so had scores that stretched from -8 to -3, -10 to -5, -7 to -4, -9 to -3, and -7 to -2. The total score of the negative factors was -54. Similarly the sixteen positive factors also had 5 which were identified by more than 1 person. Two had a range from 7 to 8, the rest were 6 to 8, 3 to 4, 3 to 5, and the total positive score was 95. This suggested that the rate was 95.

Once the balance of forces is calculated in this way only the first half of the job is to be done. The second half of the process is taken from Robert Kennedy's famous quotation "*God grant me the*

strength to change what must be changed, the patience to endure what cannot be changed, and the wisdom to know the difference."

At this point the group return to the list to consider which of the factors can be changed, and attach a score, this time from zero to plus twenty on how much. Positive factors, even when they are currently "near ten" can thus in fact be considerably improved and made even more positive. Negative factors, as a result of applied effort can be reduced, or even can cross the line to become positive. It may even be occasionally (though very rarely) the case, as a result of interconnections established between the factors indicated, that a positive change in one factor may cause the situation for another factor to worsen.

In the example above it may be found that participants consider factors 2 and 4 can be improved by a score of +2 and +7 respectively and that factor 3 could also be improved by 4 points. Factor 2 now has a score of -3, factor 4 now also a score of -2, giving a total negative balance now of 15. The new positive score of factor 3 is now 11, giving a total positive score of 29. The new grand total is +14, a huge improvement over a situation where the forces were roughly equal. This could be an indication that it would be fairly easy to ensure that the change occurs in the direction in which the project wishes to go. This thus helps us identify the forces that could be best targeted by the project, that would have the greatest difference in improving the situation in the desired way.

At the force field analysis conducted in Brazil, mentioned above, it was found that 5 of the factors could be changed, five could not. Two of the five could be seriously weakened, shifting from positions of -6.5 to -1, and -7 to -1. Three of the factors were considered to be able to be shifted from negative to positive. One could be shifted from -5.5 to +2, one from -5.5 to +5, whilst a third, currently estimated at -2 could become +10! When added together the negative factors were weakened so that they would have a total impact of only -16.5. Six of the positive factors it was found could be strengthened, giving a total positive score now of +121. The difference now meant that the project, if all goes according to plan, had a total positive score of +104.5. Basically it was this found that the rate of change if the project was done would be 2.5 times faster than the rate of change expected without the project. Thus it was felt that a 12 month project would otherwise take two and a half years. For the group of 8 people planning the project, two and a half years was too long to wait so the project was considered a valuable one.

As before once again people had the chance to personally score each factor and a range of scores will then be collected, probably indicating differences of opinion based upon personal circumstances. Adjustments are then made to the scores, and those factors having the biggest potential impact are highlighted. As seen in our example, even with only a few possible changes, one will often find that the balance of forces has significantly shifted, and the outcome then becomes how do we capitalise on and actually come to realise these opportunities for change. This is the work of the next stage of the Dragon Dreaming process, taking all that has been learned so far and using it to create a the tasks and activities for your project.

There are a number of things that can go wrong with a force field analysis. One is that instructions must be very clear that at first you are only collecting current perceptions of the present situation, not what the forces could be like after the project is conducted. Another problem will occur if the group engage in too much discussion and justification for the forces collected. This will produce a degree of "analysis paralysis" and the motivation of the group will be negatively effected. The scores are only an indication of expectations, and the exercise should be kept light and playful.

The usefulness of the force field analysis is most in situations where a group is seeking funds from a government or charitable body, in convincing the donors that all factors have been considered in

planning the project. It is also very useful in looking at which factors can best be considered in strategic design.

AN ALTERNATIVE APPLICATION

Force-field analysis can also be successfully applied to individuals who are caught in a dilemma and cannot make a decision between alternative courses of action. The two alternatives are considered side by side. All the positive and negative factors affecting one alternative are considered, and scored as above. Changes in this case may or may not be analysed. Once this is complete, the positive and negative factors confronting the other alternative are then considered and scored. The results of the two alternatives are then available. Once again, there will be a bodily reaction to the result. The alternative that has the highest positive score may be associated with an overall feeling of enthusiasm. This is usually a case of the force-field being a fairly accurate current measure of one's thoughts and feelings about an issue. On the other-hand it sometimes happens that the force-field that is most positive is associated with a feeling of "Oh! No!" In such circumstances it is again the case that a powerful force that could significantly change the score has been overlooked. Anyone conducting a force-field analysis, or facilitating the process for a third party, or a group of people, then will have the task of trying to elucidate the missing factor and to score it appropriately.

A force field can also be used in order to examine how the local environmental system affects a project. For example in "constellation" work (often done for family analysis) the factors of a force field are considered in relation to each other. Their orientation and proximity are first of all considered, and then the system is analysed by considering what changes in one factor will have upon the others. This gives a good understanding of the various feedback mechanisms are in operation around the individual in family therapy, or the project, in this case. Playing the system by getting various members of the Dream Team conducting the analysis to stand in the position of the forces, and then rehearsing what changes in one force are likely to alter the positions of the others is a good way this can be done.

FINISHING THE PROCESS

The end of a force-field analysis should always end with a debriefing about the process. Check in turn with each participant, do they think the force-field analysis has produced useful results? What have they learned from the exercise? What unexpected outcomes have they discovered or "Aha!" moments occurred? People may find that they have discovered something that they did not know that they did not know, or have discovered something about themselves or their context that has to date been overlooked, and as a result an opportunity was in danger of being overlooked or a peril to their project neglected. A final and last question to each person should be "What in your opinion could be improved?"

Force field analysis, like everything in Dragon Dreaming, is a still evolving process. Although it has been used many different times, in many different circumstances, people who experience the process should be encouraged to reflect on "How if they had to do the process all over again, could

it be changed for the better?" In this way the facilitator of the process can gather information which will make their next force-field analysis even more successful.

CHANGING OURSELVES – BUILDING AN EMPOWERING PERSONALITY

Saint Ignatius Loyola, the founder of the Roman Catholic Jesuit Order said that if someone could give him a child till the age of seven, he would give you a Catholic for the rest of his life. This statement is a depressing one, as it suggests change can only happen in the first 7 years, and after this no personal change is possible. It is a statement which one often finds in psychology too, that the essence of one's personality is set early in life and the rest is just elaboration of this basic pattern. Dragon Dreaming proposes that this statement is false, but to make it false requires one does five things.

1. Take people away from their everyday environment. It is this environment that holds a particular behaviour in place. Around each of us are arranged patterns of work and leisure, obligations for earning an income, serving a family, maintaining a lifestyle, and various cultural obligations. Change requires us to have a "free space" away from such things even if it is for only a short space of time.
2. Enable people to reflect upon their past, looking at things that they appreciate and that they regret or have suffered from. This reflection helps them understand the conditions of their life at the present and may equip them with a better understanding of the forces which have changed them in the past.
3. Then there is a necessity for the people gathered together to share emotionally powerful or "cathartic" experiences together. This process loosens them up, enabling them to feel safer with the process of change, and builds an atmosphere of trust amongst the participants that a deeper sharing and caring for each other is truly possible, giving an intimation of the kind of society it is possible to build.
4. Then we are required to think about the future. What changes do we want to make and how can we make those changes effectively. This is the core of Dragon Dreaming, as it aims to give people the tools they require in their daily lives. Seeing where you are now is important, but in making any change it is more important to see where you want to go and find how to get there.
5. Doing those 4 things in the absence of the fifth will not produce change, for while one has been away from the everyday world, looking at how we can change ourselves and that world, the world has been continuing as before. Those participating in the course, workshop or training activity will have to return to the world from which they came, and that world, given the balance of forces operating in that world will want you to resume "business as usual". It is absolutely essential therefore that there is follow up, that prevents the changes you are wishing to make from disappearing back into the activities of daily life.

THE FORGETTING CURVE – ONE REASON WHY CHANGE OFTEN DOES NOT OCCUR

At Dragon Dreaming workshops, I often speak about the forgetting curve. This curve means that it is normal that a person forgets 50% of what they have learned in 24 hours. Fifty percent of the

remainder is gone within a week. And then within a month, there is a further loss of 50% of what was left, meaning that at the end of a month, it is typical for a person to only remember 1/8th of what they originally learned. What a waste of learning. If coming to a Dragon Dreaming workshop, what a waste of the time and expense people have spent in coming together.

It is a good thing that there are ways of reducing the forgetting curve. One way is simple. Using a daily object which has an association with the time spent in learning, can call it again to mind and prevent its forgetting. For this reason in a workshop I always make a sacred space in the middle where such objects – a key ring, a piece of jewellery, a watch or some item of personal value that one may use in daily life, can be placed for the duration of the workshop. Hopefully, when one returns to daily life, then this item can be a reminder of the time spent together at the training.

A second more prosaic way is through the taking of notes. Schools are based upon this method. Indeed, it is sometimes said cynically that a lecture is the way in which the lecturers notes can become the learners notes with the least amount of brainpower in between. Taking notes however is important as it means that the hand and the eye are engaged in the learning as well as the forgetful ear. Taking notes by itself is of only limited use unless one takes the time to read them later. To reduce the forgetting curve you need to read them at least three times, once within 24 hours, a second time within the week, and a third time, within the month.

The third and best way of reducing the forgetting curve is to teach what you are learning to someone else. The best way of learning anything is to become a teacher of that subject. So many people feel inhibited at this, because they are taken in by the hierarchical mystique of “teachers” taken from a school or university setting where hierarchical differences in rank and status are preserved. Teaching, like much within different projects all too often is a case of the story of anyone, everyone, someone and no-one. In sharing what we have learned, anyone can do it. Everyone should do it. Someone should have done it, but no-one did it. Everyone blamed someone for something that anyone could have done, but still no-one did it. To escape from this trap, take the courage and share what you have learned. Again it is important to do this at least three times. Share it with someone within 24 hours of returning home at the end of the workshop. Share it again within the week with someone else, and then finally share it again with someone within the month.

Of course the very best way of slowing down the forgetting curve is to organise a Dragon Dreaming workshop yourself, and together with an experienced facilitator, take on the role of co-facilitator. You will be amazed at what you learn about the Dragon Dreaming process. Doing this once a year is extremely important if you are serious about cutting down the forgetting curve and achieving the kinds of changes which you wish to see in the world. Of course this is not just true of Dragon Dreaming – it is true of all of those processes which aid bringing about change in the world – Permaculture, Transition Towns, Non Violent Communication, any personal growth or community change activity, or work that exists in service to the earth. It is one reason why I always claim that I am still in the process of learning about what Dragon Dreaming is all about. Every time I run a course I learn more about the subject I am teaching.

These techniques will help us in bringing about the changes we wish to make, but we need more. We need a better understanding of the way in which change itself occurs.

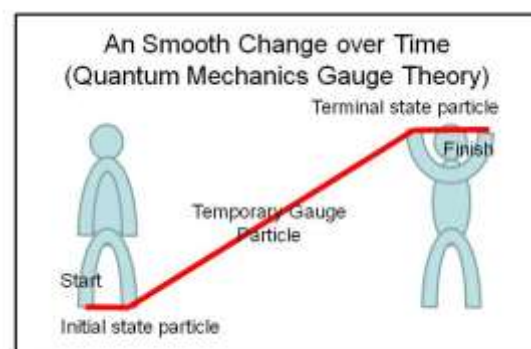
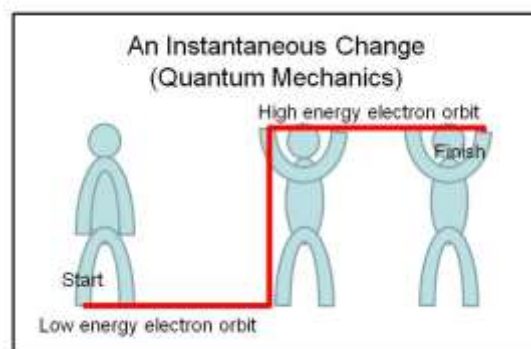
EXPLAINING THE NATURE OF CHANGE TO OTHERS

In Dragon Dreaming workshops I often pick on the biggest man present and ask him to stand. I then explain that my feet represent the position we are in at the start of a project and the top of his head represents where we want to be at the end. The simplest change process is one that occurs instantaneously, where one situation one moment stops and a completely new one starts. This can be shown placing a long ribbon on the floor at my feet, at one end, and placing the other end at the head of the person standing. Then by getting someone in the middle to hold the ribbon on the floor with one foot and raise the other end to the height of the first man standing, as in the diagram.

Although such instantaneous changes are very common at the level of Quantum mechanics, they are much rarer in the macro world of which we have experience. For example, when energised through the absorption of a photon of light at a specific wavelength, an electron may jump from an inner orbit of an atom, towards an outer orbit, *without passing through the space between*. It is as if the electron disappeared at one place, and magically reappears instantaneously at another. In our lives we have little experience of such Quantum shifts, although some scientists have suggested that such shifts lie at the basis of thought, when we have a “new idea”.

Usually, however, the process of change is more complex. Using the long ribbon I then explain that the ribbon stretched between my feet and his head, represent the bridge built by the project that will allow us to move from the start to the end. I explain that the simplest transaction is a linear relationship, as shown in the diagram, but such changes, outside those observed by physics at the quantum level, are very rare. More common are the changes shown in a positive feedback loop. I illustrate this by getting him to allow the ribbon to bow under its own gravity, creating a parabola, as shown.

A positive feedback is a change where each sequential step, increases the likelihood of further change in the same direction. For example, in a population explosion, if parents succeed in raising 4 children to a reproductive age (let's say 25), and these children do the same, then the human population doubles every generation – 2, 4, 8, 16, 32 etc. These changes have a certain property in common, as is shown, there may be a long period at the beginning when the change is barely discernable, but with each successive change in the example above, the time taken to achieve the result of the previous step in the sequence is halved. Very soon large changes are observed to occur in a very short matter of time. Such chain reactions will not usually stop at the desired target. Their momentum tends towards what is called “overshoot and collapse. Evidence in the real world shows us that such positive feedbacks are unsustainable. To illustrate this point I get the



person I have selected in the workshop to raise his hand beyond his head and allow the extra ribbon he is holding in his hand to collapse behind him on the floor. Such an overshoot scenario, is found often in nature, as we shall see. And unfortunately it is often the case found in many projects. During the workshop I illustrate these changes in the front of the group. If a sustainable change is required, the positive feedback can only continue for an early period, before being replaced by a second kind of change, known as negative feedback. A negative feedback does not mean that is in any way bad or reprehensible. Rather it refers to the effect that each successive change in a negative feedback reduces the likelihood of change in the same direction as the previous one. Negative feedback curves tend to steer one towards a limit, a limit which we hope will be sustainable for the long term for our project. It is the coupling of a positive feedback with a negative feedback curve which will hopefully achieve in a sustainable way the target set.

People say that introducing mathematics into a book intended for the general public will reduce the sales of the book, but I refuse to believe that people are so dumb or stupid. It is true that many people are afraid of mathematics, as a result of poor teaching of the subject at school, but it is mathematics which is the “language” spoken by the universe as a whole, as illustrated by the scientific discoveries in physics, chemistry and biology. To continue to be afraid of a mathematic expression is to remain blind to the magic of the cosmos. The sustainable or a “logistic curve” I am here talking about can be described mathematically by the following simple expression.

$$dN/dt = N_{t-1} r (1 - N/K) \dots\dots (1)$$

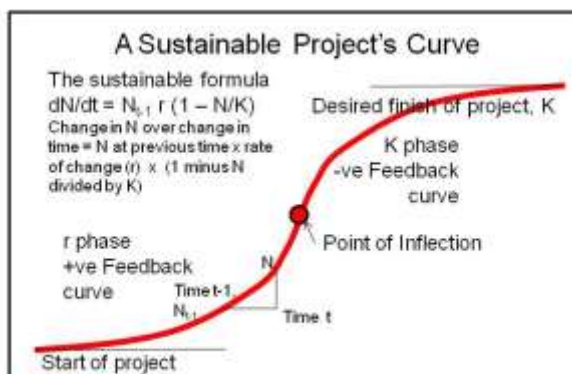
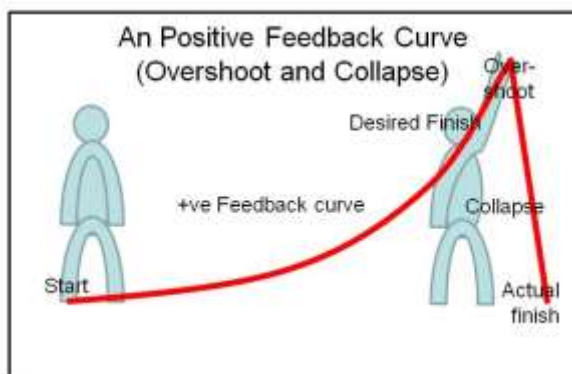
It is not necessary to use this formula in the courses on Dragon Dreaming, but it can be useful in an intensive course for a number of reasons which I will explain below.

The number “N” may represent any “quantity” that is going to be changed by the project, at any time (t). It can represent for example the potential capacity of the dream team to make the changes the project requires for its fulfilment, or even something as mundane as the funds necessary to

implement the change. It can be a measure of the number of people needed to make a project sustainable, or the money required for a project. In fact any quality that can be quantified in any way can be said to be a value of N.

“dN/dt” is equal to the degree of change of N over a specific time (“t”). It shows where you are up to at any specific time along the path of the curve. Thus “t-1” represents the situation immediately before the time the quantity examined is last measured.

The quantity “r” is equal to the rate of change from one state to another. We have met “r” already, in our examination of the forcefield analysis, where hindering forces are subtracted from helping ones. It is explained as the balance between those forces which help a change, and those forces which would hinder it. In the example I gave above of a doubling of the population every generation,



the number “ r ” is equal to 4 children / 2 parents, because that is what the difference between the birth rate and immigration rate (that increases the population) minus the death rate and emigration rate (that decreases the population), has to be, to replace one’s two parents when they die. What this means is that the birth rate, minus the death rate, leaves twice as many children reaching adulthood and having children themselves than before, when the population growth was zero. This quantity is important as it connects to the rate of reproduction of a species in the environment as we shall see below.

“ K ” is the sustainable “carrying capacity” of the environment for the characteristic “ N ”. What this means is that the number N can grow only up to the limit the environment can sustain. If we suppose the local environment can sustain only a number of 1,000 lions in a nature reserve, and if we further suppose that if that number of lions is greater than 1,000, that they will deplete the number of zebra and impala, so that the additional lions die from starvation, until the number falls below the number of zebra and impala. At this stage the number of zebra and impala increase to their own carrying capacity in the environment, allowing the number of lions to increase once more to 1,000. This figure thus represents the carrying capacity for lions in the region we are speaking of. This is not just true of lions. It represents the sustainable level for your projects too. Thus when the number N is equal to the number K , then N/K becomes equal to 1. The expression “ $1 - N/K$ ”, in such cases means “ $1 - 1$ ”, which is equal to the value of zero. Multiplying “ $N_{t-1} r$ ” with zero, gives a zero, which means at this stage all increase in the number N will stop increasing, and sustainability is reached.

What we find then is that the sustainable growth of any system will during the first half of the activity, be dominated by the factor “ r ”, the rate of change – which produces a positive feedback curve. In the second stage of the process, the change is dominated by the factor “ K ”, which produces a negative feedback activity. The point in the middle is the “point of inflection”, where both factors are in some degree in balance, and where the r factor is weakening and the K factor is taking over. To produce a sustainable situation, this transition needs to be smooth. If it is a difficult process and the r factor continues to dominate, then we risk the “overshoot and collapse” scenario discussed earlier. We will speak more about this situation later.

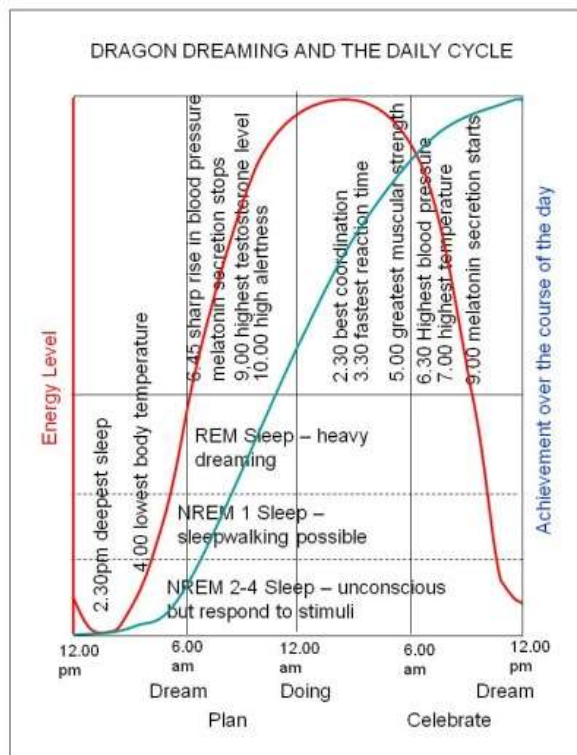


At this stage in the Dragon Dreaming workshop, I introduce a second curve. This curve represents the “amount of work” needed to be done by the system at various stages of the sustainable curve. For example what we find at the beginning of a project, the amount of work done in the start-up stage is low, but it rises very fast, with a positive feedback curve. As it approaches its maximum, it becomes for a short while a negative feedback, peaking at the point of inflection, because it is difficult to work beyond the level of one’s

capacity. While this is difficult of individuals, it is also difficult for groups too. After the point of inflection, the amount of work done starts to fall, at first quite fast (again with a positive feedback), but then as the change begins to arrive at its desired end state, the amount of work also begins to fall along a negative curve. When the project is complete and the desired end point is reached, or when the project is fully sustainable under its own self-generated energies, there is no more work needed, and the amount of work done is back to zero.

Understanding the work curve is important, as it tells us how much we need to do in order to bring our desired goal to pass. If the amount of work exceeds the capacity of existing members of the group then one of three things in a project has to happen.

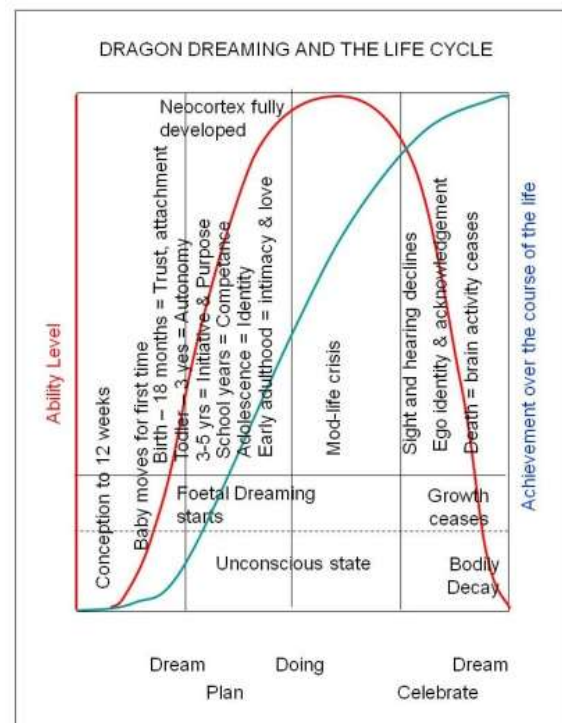
- Firstly you can increase the capacity of the group to put in the work needed. Thus, for example, a training course may enable people to work “smarter” rather than working “harder”.
- Secondly, you can increase the size of the project group. Enrolling new members with specific skills can increase the value of N, by enabling more work to be done. This would enable you (like in the first instance) do more work, this time by working more rather than necessarily working smarter. Alternatively
- Thirdly, you can reduce the size and scope of the project to a scale where it becomes possible with the current workforce, the amount of time they have and their current skill level. Reducing the scale of the project does not necessarily mean compromising on your goal, but merely means that you are breaking the concept of the “dream” into two or more parts.



ability to concentrate or learn effectively is falling fast, and by midnight most people are fast asleep. The amount of work done during the day follows the “logistic curve” shown above for a sustainable project.

This same curve is found over the course of a lifetime. Before birth, almost all of the work we do is consumed as biological growth. The learning of small children in the first years of life is prodigious, and declines so that one is at one’s biological peak at the age of 24. Then, although we may learn much more, we find that our eyesight may start to decline in the mid 40s. By 65 our physical abilities are declining, and by 80 we need to take things much slower. At death our ability to work obviously falls to zero, but work is still occurring as our bodies decay. Whilst our physical and mental abilities rise and fall in this pattern, our contribution to life as a whole follows the familiar project pattern. In this way everyone’s life is a project. The

The work curve is also important as it demonstrates the “nested” nature of projects. This work curve can be found in the amount of work a person does each day. For example they spend the night dreaming, asleep, incapable of much activity at all. Their ability to concentrate rises so that by 10 o’clock they are at their peak mentally. Repetitive work activity peaks between 2 and 3 pm, and by 6 pm people’s ability to work hard starts falling rapidly. By 9 o’clock in the evening, their



question is what kind of contribution do we make to the larger project in which we are all embedded, the unfolding of human life, indeed, of life itself on planet Earth. Some lives obviously contribute a great deal, others less so. Still others, such as Hitler, can be said to do immense damage. The choice is ours.



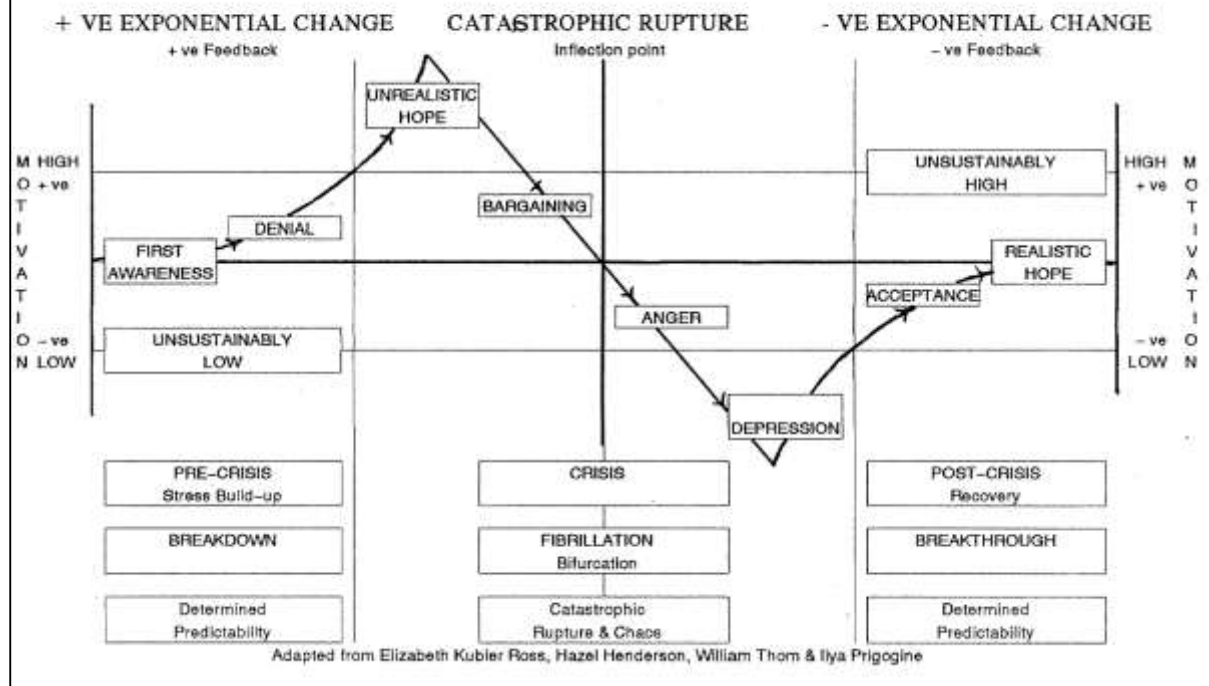
At this point I then introduce the concept of motivation in a project. To illustrate this point I draw a horizontal line through the point of inflection, as seen in the following diagram. This horizontal line represents the position of neutrality – to the top represents positive motivation to the bottom represents negative motivation. This line is cut twice by the work curve, once when the work is increasing towards its maximum (usually this is close to the “inflection points” for positive and negative feedback along the trajectory of the work

curve). At these points I draw a vertical line from the top to the bottom of our diagram. These lines describe the different stages of a project that we have already met – separating the Dreaming stage, from the Planning, Doing, and Celebration stages of a project.

Now what happens with people’s motivation? M. Scott Peck, the Christian psychotherapist, suggests that in most cases the experience of community is accidental, that it occurs as a result of accident or disaster. At such times people do come together and support each other in different ways. Often when the situation reverts to “normal” – where people live separately and are disconnected with neighbours or colleagues, those that experienced the genuine miracle of community are left feeling a sense of regret and longing for the supportive feelings they found during the time of difficulty. These feelings have often been misdiagnosed as a situational Post-Traumatic Stress Disorder (PTSD). Scott Peck’s experience however shows that a sense of community can in fact be consciously created, that relate to the various stages typical of community building.

Generally it goes like this.

INFORMATION TRANSFORMATION, TRANSITION THEORY AND CHANGE SITUATIONS IN DISSIPATIVE HUMAN SYSTEMS



PHASE 1: PSEUDO-COMMUNITY

Pseudo-community can seem like a very “nice” stage. Generally people are on their best behaviour, keeping those aspects of themselves that they are unhappy about well under control. As a result in this stage we see what people think is best about themselves.

Stage 1: Is the approach stage of first awareness. A person thinks first about a project, or a new person hears about the project for the first time. Not much happens at the start here, as one does not necessarily follow up on what one has thought about or heard. This is therefore a long stage, with only a gentle rise in motivation.

Stage 2: This is the seduction stage. What happens here is a threshold has been crossed. The initial stimulus may be repeated, or the person hears of the project a second or third time, and decides to get in touch with the project team. When this happens, the strength of the idea starts to grow, or someone from the project team responds. The person at this stage of the project finds themselves thinking of the project more and more, and so this stage is shorter, and motivation tends to grow much faster.

Stage 3: This is the engagement stage. At this point the person becomes committed to the project. Up until now they have been outside the project looking in, but at this stage they decide to “make the project theirs”. This engagement stage is even shorter than the first two, but during this stage their motivation for the project rises even faster. It is clear that the process over these earlier stages is here a positive feedback curve.

Stage 4: This is the honeymoon stage of unrealistic hope. The honeymoon stage of a project is a wonderful stage. This is the stage of maximum motivation. You feel so enthusiastic for the project,

you enjoy working with the team that comes together for the project, and problems seem easily resolvable. The relationship between yourself and your intentions, and the relationships between team members seem to grow easily, and people are generally very happy to be working together in such an effective way. But it cannot last. The reason why is we are in an “overshoot and collapse” scenario here.

PHASE 2: THE STAGE OF CHAOS

Chaos is a difficult stage, as at first it seems to be very uncomfortable, and when confronted with the chaos, people often seek to return to the “niceness” of the pseudo-community. In the stage of chaos, people turn to the leader to organise the group to remove the chaos, but as Scott Peck shows, an organisation is not a community, and Dragon Dreaming is about Community Building as one of its objectives. If the original dreamer does not take on this leadership role, then the group may seek to create another leader, who can undertake this task. Alternatively it can take the nature of finding who is the culprit and trying to “fix”, “heal” or “convert” that person to the desirable path. As again this phase has a number of stages – as follows

Stage 5: Is the denial stage. I often show how in this stage of a project, as motivation starts to fall, and to fall quite steeply, passing through the point of inflection down in the third stage of the project into negative motivation. There is a reason for this fall in motivation in a project. Firstly the amount of work done in the first stage of a project has been rising faster than the results. People are aware that they have been working so hard and so little appears to have been achieved. They are aware of how much further they have to go, and they begin to be worried that this will exceed their capacity or the capacity of the group. Also, at this stage, a project, which appeared quite simple at the beginning, in the planning stage is beginning to appear as very complex. But at this stage, despite these early misgivings, people are prepared to “sweep” any potential discomfort at the project, or with the team with which they are working, under the carpet. They pretend, often, that things are better than they really are.

Stage 6: This is the compromise stage of bargaining. The compromise stage is where people begin to be aware that things are not going as smoothly as before but that they here are prepared to “trade off” what seems to be not essential in the hope that they can retain the essential core of the project. Also people begin to limit the amount of time they are prepared to devote to the project, or other members of the team, building or rebuilding relationships outside the project that they may have neglected during the honeymoon and denial phases. This stage of bargaining may continue whilst motivation for the project is at its highest, but it does not continue when the motivation curve crosses from positive to negative motivation.

PHASE 3: THE STAGE OF EMPTYING

Scott Peck speaks about our yearning for a deep sense of community, but also suggests that we simultaneously fear the same community, as it may mean that we have to give up important aspects of ourselves. As a result we frequently find that in community building, whilst people speak yearningly about achieving a sharing and caring community, they act in ways that sabotage a group achieving such a sense of community. This sabotage can be very subtle. It can be about making unrealistic demands of oneself or of others. It is often about judgementalism, unhelpful criticism or blame giving. Scott Peck considered that this stage, that of Emptying, involves a difficult purging of oneself from the factors which hinder the creation of community.

Stage 7: Is the stage of Anger, what I call the 3 “F” stage. It is the stage of classic response to stress. The first response in such situations is to

- Freeze. This response is instinctual in situations of stress. It is hoped that by doing nothing, maybe the cause of the stress will just go away.
- Flight is the second response. This too is instinctual. One hopes that by leaving the situation things will improve. This is the stage where individuals in groups try to break earlier commitments they have made. If this cannot occur
- Fight is the third stage. Here the individual will turn on those they feel are responsible for the stressful situation (even if they feel that person is themselves) and they will blame and attack those they see as the cause.

Stage 7 is the stage in which we get locked into habitual “win-lose” strategies” once we see that compromise does not work.

Stage 8: This is the stage of depression. Here people are feeling hopeless and fatalistic, the project is not going as expected, and it all seems too hard. This is the stage of burnout where the people are ready to leave the project, just to get their life back into balance. Many projects collapse at this point because the people have not prepared adequately for their departure from the project. When people arrive at this stage they are apt to make stupid or non-productive decisions. When a person is involved often they start looking for what we call “new blood” (you would think they are vampires). If a new person arrives and is interested in a project, before anyone can say anything, they are trapped into taking the position of authority, whilst those who were there previously exit the project. As a result they are left in a difficult situation, trying to manage, in the absence of the past experience and the background history of the project. It is difficult when the project crashes all around them. Those who left have their feelings confirmed – “See it was a rotten project anyway, and it was all left to me!”

This is the history of a project that does not celebrate.

PHASE 4: AUTHENTIC COMMUNITY

The stage of authentic community means an end to the process of fixing, healing, converting and blaming. Following the quiet confessing that occurs when we are prepared to face up to the depression of things not going as easily according to plan as we would have liked, comes a stage of true support and sharing.

Stage 9: This is the stage of recovery and acceptance. Here the negative feelings of the anger and depression are seen within a larger context, and healing and learning occurs. One’s motivation rises rapidly in this stage but it is not the unrealistic motivation of the honeymoon, but rather a negative feedback cycle where the motivation becomes sustainable. Here one comes to see the results of the project more accurately, and the achievements become more easily visible, both positive and negative.

Stage 10: Is the stage of realistic hope. The stress of the project has fallen because when the project is sustainable, there is little work needed to keep it going. It is the emotional state which promotes the belief in a positive outcome related to events and circumstances in one's life, as a result of what has been achieved. It the "feeling that what is wanted can be had or that events have or will turn out for the best". One comes to cherish the expectation of fulfilment, and accept with satisfaction all of that which happened.

M. Scott Peck describes this stage as the stage of Authentic Community, and he suggests that when one successfully transitions to this stage, the only word that is truly appropriate is “glory”. At this stage, not only one does feel “seen” truly for whom they really are; both strengths and weaknesses, there is a true unconditional acceptance of themselves within the group, and they are aware of

being accepted for whom they are. This unconditional acceptance in Greek is Agape – a stage of the love of and recognition of the magnificence of the other person.

As I said, these stages tend to be found with every project. They are associated with one's response to rising levels of stress, and how in a crisis, we come to cope. They are found in all projects, to varying degrees, although awareness and careful preparation will prevent the project collapsing to the depths described here. Why does it occur this way?

Building a project based upon a win-win approach rather than our culturally accepted dominant win-lose games is probably the most important thing that we have to do. Secondly, the great fall in motivation, while it is a natural part of the cycle, can be halted and reversed through building celebration into every part of the process.

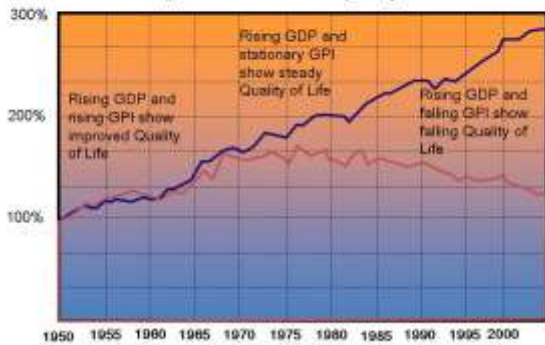
For example, the bargaining stage in the fall of motivation is both a tendency and a trap. As people who have done earlier stages in Dragon Dreaming know, a compromise is a win-lose game by another name, and to achieve a win-win outcome it is important to be totally uncompromising. Because compromise occurs where you sacrifice some of what you really want, in the hope that the others will allow you to keep what you really need, this occurs because of a lack of trust. Building a win-win, where you insist the others get what they need and they work with you to get what you need creates a positive emotional climate free from the judgements of the "blame game" that normally happens within win-lose games. If this is the result, and celebration is built in early then rather than the scenarios 1 and 2, below, we can hopefully achieve scenario 3, where motivation remains high and positive. Failure to do so will, however, result in a minimum in scenario 2, while often, the result of a project which reduces the carrying capacity of the environment can in fact result in scenario 1.

Another factor to watch is the way in which different people, based upon personality differences, spend different amounts of time in the different stages in a project. Thus one member of a Dream Team may have progressed rapidly to the depression stage, whilst a second member is still experiencing the honeymoon. In this case the depressing person finds it very hard to understand the optimism and good spirits of the honeymooner, whilst the honeymooner will say "I cannot understand Joe, this project is so great". Having empathy for different people at different stages here is a very important tool to overcoming any conflict that may arise as a result.

FURTHER ELABORATION OF THE CHANGE PROCESS

In their book "Panarchy" Holling and Gundarson suggest that the "r" stage and the "K" stage described here are only half the process. They tend to be easily seen because they are fairly robust and sustainable processes with a high degree of resilience. They show how "potential" of a system, tends to be maximised as complexity increases up to a certain critical threshold, similar in some respects to the maximum point in the amount of work done in a sustainable project. If the situation attempts to remove stress through still further increases in complexity, a law of diminishing returns sets in and potential will start to fall. Such threshold or transition effects have been observed by Manfred Max Neef in looking at the fulfilment of fundamental human needs, and by Daily and Cobb in the way in which the "Genuine Progress Indicator" or Index of Sustainable Economic Welfare, will fall when the Gross Domestic Product of a nation exceeds a certain critical value.

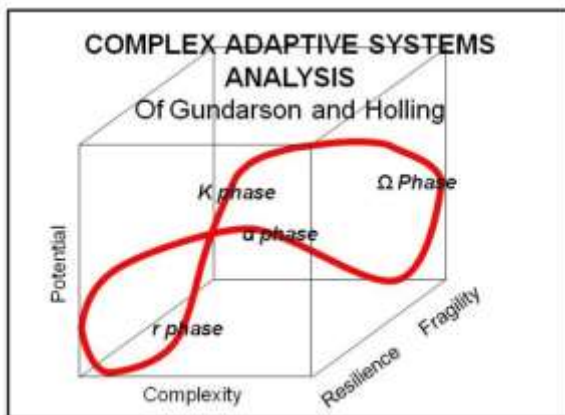
Comparing US Gross Domestic Product with Genuine Progress Indicator per person



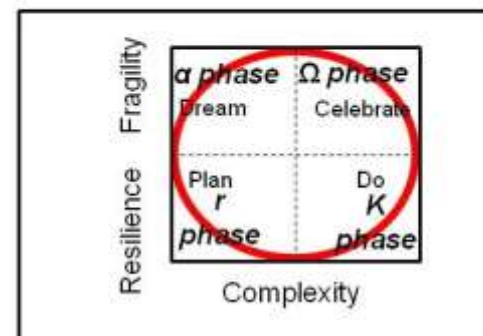
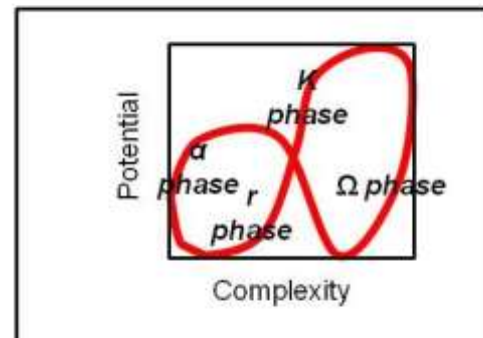
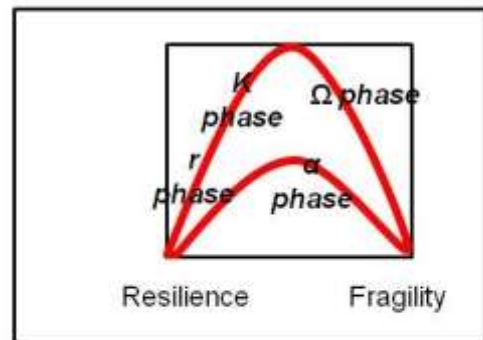
This graph shows that rather than increasing the quality of life for the average American, in fact from about 1970 to 1985 the quality of life of the average American did not grow as GDP increased from 166% of the 1950 level, to nearly 220% of the 1950 level. Since 1985, in fact the average quality of life for the average American has in real terms declined. Pressure upon the middle class has weakened its position, as the increased incomes have predominantly gone to a smaller percentage that was already comparatively wealthy, whilst the number of poor people in the

community are even poorer, relatively, than they were before.

Holling and Gunderson shows that such an increase in complexity beyond a certain critical factor does not increase potential, but in fact begins to reduce resilience. People find themselves in situations of increasing risk and fragility, and eventually a stage of rapid collapse occurs, which they refer to as the Omega phase. The collapse in potential, and the reversal in complexity, as the environment reverts to a more simple state, often releases a degree of "potential" that was previously frozen, and this release of frozen potential can provide the resources necessary for a new "r" phase to occur. The four phases are shown on the following diagram.



An interesting observation occurs when we look at the situation in terms of any two of these three dimensions. When viewed in terms of just complexity and potential the situation traces a diagram like a slightly squashed infinity sign. Thus for example a leaf on a tree in spring, at first shows a growth pattern typical of an "r" phase, but as the leaf begins to approach its maximum size for the species, its growth slows in a typical "K" pattern. But it does not stay in the "K" pattern forever. After a critical time, usually with the coming of autumn for deciduous trees, the leaf begins to dry out and will then fall from the tree as



“leaf litter” on the ground. The structural complexity of the leaf will break down, adding to the soil humus required for the growth of new leaves next spring.

Just as this applies on the graph of complexity with potential, when we plot potential against resilience and fragility, a different pattern is observed. Here we find a pendulum swing, from the fairly resilient growth patterns, observed by trees as well as leaves, up to their maximum size. The tree may stay here for a number of years, but eventually senescence sets in. Parasites and diseases may sap the resilience as the tree becomes increasingly fragile, perhaps suffering damage from storms or fire. The tree eventually falls, becoming home for a new crop of insects and termites, which recycle its nutrients back into the soil from which the tree sprung. The break in the canopy of the forest, caused by the falling tree may allow light to reach the ground, aiding in the germination of a seed and so allowing the cycle to begin again.

When we plot complexity against resilience and fragility, a familiar circular cycle is apparent. Here, in project development, for instance, the Planning stage is the “r” phase of a sustainable project, where as the Doing stage is the familiar “K” phase. These steps are those that generally take the greatest amount of time and if properly organised, are resilient processes which lead to the desired results. The Celebration or Omega stage is one of increased fragility, and generally takes much less time than the first two stages. In fact it is successful celebration that releases individual energies for the Dreaming or Alpha stage, of either a renewal of the project, or else of a creation of a new project altogether.

BIOLOGICAL SUCCESSION AND HUMAN GENDER

These patterns of “r”, “K”, Omega and Alpha, are this very deeply embedded in our biology. They are also observed in biological succession. In 1883, the island of Krakatoa, situated between Java and Sumatra, blew up with the largest eruption in modern times. The sound was heard for thousands of kilometres, a tsunami travelled twice around the world, and all life on the island was extinguished. On the barren island, scientists were amazed to find life returning within 6 months. Spiders carried on their webs, seeds carried by birds or by waves from the nearby mainland took root. The species involved had certain characteristics in common. They tended to be those that would reproduce with large numbers of offspring, but in which the parent invested comparatively little in the survival of any one offspring. These early colonizers are generally “r” species. After a number of years, as the number of “r” species grew geometrically with a positive feedback curve, scientists noticed that the rate of arrival of new species began to decline. Furthermore, the new species tended to reduce the numbers of earlier “r” species present. These new species had a different reproduction strategy. They tended to produce fewer numbers of seeds or offspring, but invested a great deal more of the parent’s own energies in the survival of each individual descendent. Eventually a biological “climax” was reached, in which the number of species on the island stayed roughly constant, although one species continued to get replaced by another, better adapted to the local environmental conditions in which they found themselves.

Seen from within this situation, human beings are definitely a “K” species. We produce relatively few offspring, and invest comparatively a great deal to secure the survival of each child until they too reach a reproductive age. Humans tend to be exceptional in this way. However, there is a huge difference here between the reproductive strategies of men and women. Men tend to be more typically “r” strategy reproducers. We produce billions of sperm, but invest very little in the survival of any one. Women are classical “K” strategy reproducers, they invest an enormous amount of

bodily energy, 9 months in pregnancy, up to 4 years breast feeding, and then attention to securing the survival of a child to adulthood.

These differences between men and women, explain much of the differences observed between the two sexes. For instance, the largest number of children to any one man was Sultan Ismail of Morocco who fathered more than 1,000 children. The largest number descended from one woman is XXXX, born to YYYY. Thus we find evidence genetically that there are more than ½ million descendents of Somerled, the founder of both Clan MacDonald and Clan MacLeod, in Scotland. It has also been found that 5% of the population found between the Caspian Sea and Korea, are descended from one 12th century man, who can only have been Genghis Khan. These findings, that men tend to have more children than women, and that men are more inclined both to travel further, and to kill other men, than are women, explains why the last Universal Common Ancestor of men, as determined by the male Y chromosome, lived some 70-80,000 years ago, compared to the Universal Common Ancestor of all the world's women (called "Mitochondrial Eve" after the fact that her genetic material found in her mitochondria, the energy batteries of the cell) lived 150,000 years ago, nearly twice as far back. Generally we find heavily patriarchal cultures are associated with polygyny, are more hierarchical and violent, with women being poorly educated, and having many children. Cultures associated with sexual equality between men and women tend to be less violent, are more sustainable, have smaller families, and allow women to have freedom to determine for themselves how many children they will have and when they are born. It may also explain why more women than men generally are interested in sustainability

CONCLUSION – WHERE TO FROM HERE

Every change has the characteristics of these three kinds of curves

- the transformational curve, where the change is successful and becomes sustainable in the world,
- the cyclic curve, where at the end, things return to roughly where they were before through an increase and then a decrease in the activity, and/or
- the cataclysmic curve, where after a period there is a sudden rupture, a tearing process of rapid change, followed by a release of energy or stress.

These three kinds of change are found, not just within our projects, they are found alive and working in the world too. For example earthquakes always follow the pattern of the third curve. In history, revolutionary periods often do too. Examples of a cyclic curve are found over the course of a lifetime, where the capacities of an individual grow during childhood, to peak at early adulthood, and be maintained during most of one's life, to decline with age and disappear with death. This cyclic curve is also the experience of every day. During the night the only activity is dreaming. Then upon waking one begins to make plans about the day's activities. This is followed by a lot of activity, and then in the evening one "winds down" to sleep at night. It is for this reason that I say each lifetime and each day is "a project".

Examples of transformational projects too are commonplace. If one looks at what has been achieved over the course of the day, rather than the amount of work expended, one sees that it is slow early in the morning, growing rapidly thereafter. The point of inflection is usually sometime in the early afternoon, and then slowing towards nightfall. The same pattern is seen in a person's contribution over the course of their life.

Exactly the same patterns are found throughout history. We see that civilisations tend to grow, reach a peak, then decline and die. The contribution of the civilisation to the history of the world is often shown as a transformation curve. Thus although one could argue that the medieval civilisation of Western Christendom grew out of the ashes of the collapse of the Roman Empire, and flourished in the 11th and 12th centuries, to decline with the black death, and the Renaissance, to die during the wars of religion, in an important way its contribution to modern culture is still with us. Occasionally the pattern of civilisation is a cataclysmic one. One sees this in what happened to the Aztec and Inca cultures in the Americas. They grew rapidly and reached their peak, before being cut off in their prime by the Conquistadores. A rapid collapse followed, with a decompression at the end to form the new colonial cultures of Spanish America.

At different times, I have asked people, which of the three curves do they think our culture is on. Is our world civilisation of the 21st century on a transformational curve, a cyclic curve, or a transformational curve? The response often tells us much about the attitudes of the person. It also tells us much about which particular aspect of the world they are giving attention to. For example, one can fairly easily find examples of all three kinds of curve operating in the world today. But when asked a different kind of question. If they are asked “which kind of curve would you most prefer to be on?” most people then chose the transformational curve. If this is our preference, it is important that our projects follow the path of sustainability. It is important that the world does too. To get our projects (and our world) to follow this sustainable path, is the real goal of Dragon Dreaming – to produce a Great Turning, away from a cancerous culture built upon limitless growth, a culture likely to produce an overshoot and collapse with a cataclysmic curve, towards a culture which sustains and encourages the flourishing and wellbeing of all life, the human life we lead, and the more than human life of the planet as a whole in which we are embedded.