Cynefin, A Sense of Time and Place: an Ecological Approach to Sense Making and Learning in Formal and Informal Communities

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This paper outlines one of several sense making models developed by the author based on fieldwork across a range of organizations. These models are designed to pass the 'paper napkin' test: they can be drawn from memory on the back of a paper napkin and used to make sense of a situation in normal conversation. All such models are designed to force communities of practitioners to recognize the need to introduce requisite levels of variety into their thinking, and avoid single models of practice and strategy. The Cynefin model focuses on the location of knowledge in an organization using cultural and sense making aspects of four different forms of community, both formal and informal. Three of these communities are a part of the day-to-day life of any large organization, the forth is domain of innovation and strategies for forcing innovation are discussed. Allowing self-organization of knowledge within an organization, utilizing but not being used by the informal or shadow organization is seen as key to effective knowledge management. The paper distinguished between mechanical, Newtonian models of management science and the emerging organic approach, which draws on concepts from complexity theory. This paper is a much-abbreviated version of a chapter in the forthcoming book *Knowledge Horizons: The present and promise of Knowledge Management* edited by Charles Despres & Daniele Chauvel due for publication in September 2000.

Cynefin (pronounced cun-ev-in) is a Welsh word with no direct equivalent in English. As a noun it is translated as *habitat*, as an adjective *acquainted* or *familiar*, but dictionary definitions fail to do it justice. A better, and more poetic, definition comes from the introduction to a collection of paintings by Kyffin Williams, an artist whose use of oils creates a new awareness of the mountains of his native land and their relationship to the spirituality of its people: "It describes that relationship: the place of your birth and of your upbringing, the environment in which you live and to which you are naturally acclimatised." (Sinclair 1998). It differs from the Japanese concept of Ba, which is a "shared space for emerging relationships" (Nonaka & Konno 1998) in that it links a community into its shared history – or histories – in a way that paradoxically both limits the perception of that community while enabling an instinctive and intuitive ability to adapt to conditions of profound uncertainty. In general, if a community is not physically, temporally and spiritually rooted, then it is alienated from its environment and will focus on survival rather than creativity and collaboration. In such conditions, knowledge hoarding will predominate and the community will close itself to the external world. If the alienation becomes extreme, the community may even turn in on itself, atomising into an incoherent babble of competing self interests.

This is of major importance for the emerging disciplines of knowledge management. Organisations are increasingly aware of the need to create appropriate virtual and physical space in which knowledge can be organised and distributed. They are gradually becoming aware that knowledge cannot be treated as an organisational asset without the active and voluntary participation of the communities that are its true owners. A shift to thinking of employees as volunteers requires a radical rethink of reward structures, organisational form and management attitude. It requires us to think of the organisation as a complex ecology in which the number of causal factors renders pseudo-rational prescriptive models redundant at best and poisonous at worst.

We have seen early signs of a shift from hierarchical forms to one in which the organisation is seen as a network of communities, hopefully united in a common purpose. In the knowledge management arena this has meant an increasing focus on communities of competence or practice. Here the place, or *Ba,* of knowledge exchange and creation are groups of individuals logically organised by common expertise or interest. These logically constructed groups are often supported by sophisticated systems designed to enable collaboration and exchange where the group members are dispersed in space, but not in time. Such logically constructed groups are not necessarily communities, common interests and educational background are not enough in their own right to forge a community and most organisations will use meetings and social space, both physical and virtual to induce a sense of belonging and social obligation, but again this is limited in its effectiveness.

Culturally based sense making

Any model of community has to recognise the need for diversity, ambiguity and paradox. Too many of the modern day practitioners of scientific management have overused its Newtonian base and abused the thinking of its founder, Taylor, by the attempted creation of universal and overly simplistic models. We need to recognise that human society is diverse and multi-dimensional. Volunteers can and do resist mandated behaviour. Ambiguity provides scope for individual interpretation and more rapid adaptation to change; the neat and tidy structures required by traditional IT systems design oversimplify complexity in order to achieve deliverables and consequently fail to reflect the richness of human space. Paradox allows humans (but not computers) to work with apparent contradiction, and in consequence create new meaning. .

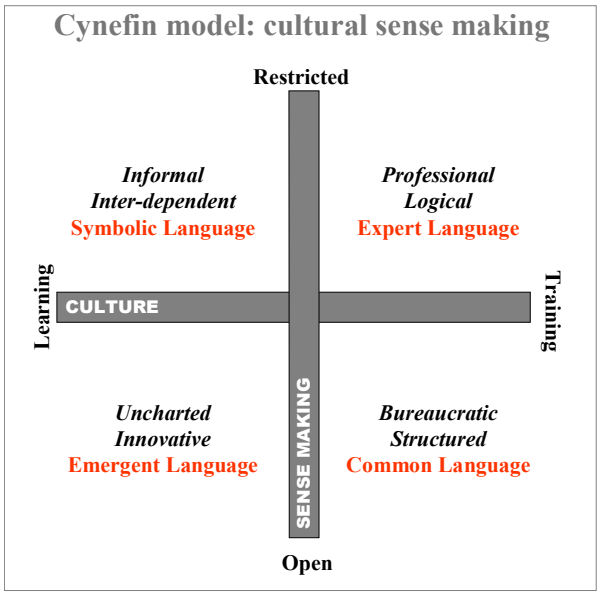

Figure 1

An early form of the *Cynefin* model using different labels for the dimension extremes and quadrant spaces was developed as a means of understanding the reality of intellectual capital management within IBM Global Services (Snowden 1999a). It has been used subsequently to assist a range of other organisations to understand the ecology of knowledge and the representation in Figure 1 reflects that experience and thinking. It is designed to create a holistic understanding of the different types of community and community interactions within an organisation, rooted in the historic, cultural and situational context of both that organisation, its changing environment and the network of formal and informal communities that make it a living entity. As such, it is designed to acclimatise the informal communities to their responsibilities within in the wider ecology of the organisation, and to acclimatise the organisation to the reality of its identity that is in part, if not principally, formed by those communities.

The dimension of culture

In seeking to understand culture we will draw on a distinction from anthropology. Keesing and Strathern (1998) assert two very different ways in which the term culture is used:

1. The socio-cultural system or the pattern of residence and resource exploitation that can be observed directly, documented and measured in a fairly straightforward manner. The tools and other artefacts that we use to create communities, the virtual environment we create and the way we create, distribute and utilise assets within the community. These are teaching cultures that are aware of the knowledge that needs to be transferred to the next generation and which create ***training*** programmes. They are characterised by their certainty or explicit know ability
2. Culture as an "…ideational system. Cultures in this sense comprise systems of shared ideas, systems of concepts and rules and meanings that underlie and are expressed in the ways that humans live. Culture, so defined, refers to what humans learn, not what they do and make" (Keesing & Strathem 1998). This is also the way in which humans provide "standards for deciding what is, ... for deciding what can be,.... for deciding how one feels about it, ... for deciding what to do about it, and ... for deciding how to go about doing it." (Goodenough 1961:522). Such cultures are tacit in nature: networked, tribal and fluid. They are learning cultures because they are deal with ambiguity and uncertainty originating in the environment, or self generated for innovative purposes.

The cultural dimension encompasses technology (considered as a tool not a totemistic fetish) and implicitly rejects the false dualism between culture and technology of much current knowledge management.

The dimension of sense making

The function of knowledge in any organisation is to make sense of things, both to oneself and to the communities with which one is connected. Knowledge is our sense making capability. The developing practice of knowledge management has seen two different approaches to definition. One arises from Information Management and sees knowledge as some higher-level order of information; often expressed as a triangle progressing from data, through information and knowledge to the apex of wisdom. Knowledge here is seen as a thing or entity that can be managed and distributed through advanced use of technology. Much of the thinking in this group is really not very new: the issues and problems of human interaction with information systems have been articulated for many years (Dervin 1998). The second approach sees the problem from a sociological basis. These definitions see knowledge as a human capability to act. Like the first group, knowledge is still seen in a linear continuum with data, information and wisdom, although the sequence is sometimes reversed with wisdom as the base (Saint-Onge 1996).

In effect both groups are correct, knowledge is both a *thing* and a *capability* at the same time. A parallel situation exists in physics where an electron is simultaneously both a particle and wave; if we seek particles then we see particles, if we seek waves then we see waves. The same is true of knowledge. One of the problems is that *things* are superficially easier to manage, and as a result early knowledge management has focused on knowledge as a *thing* that can be captured and codified in databases. More recent thinking is less directive and more holistic, seeing knowledge as "a fluid mix of framed experience, values, contextual information, and expert insight that provides a ***framework*** for evaluation and incorporating new experiences and information" (Davenport & Prusak, 1998, my italics).

Sense making requires a knowledge user to create meaningful messages that inform other community members and which allow the community to comprehend complex and ambiguous situations without either drowning in data, or accepting the restraints of a pseudo-rational simplification. Language is key. The use of language to include or exclude gives us the extremes of our sense-making dimension. We see communities sharing a common expert language that effectively excludes those who do not share that expertise: this is ***restricted***

sense making. The restriction generally results from the need to have invested time to acquire a skill set and the associated expert language within training cultures, or it can be the private symbolic language of common experience referenced through stories of learning cultures. At the other extreme, expertise is either not necessary or is inappropriate: this is ***open*** sense making. In, teaching cultures it is open to anyone who speaks the language of the dominant culture of the organisation, in learning cultures it is open in the sense that no expert language has yet developed as the situation is new.

The Cynefin Quadrants

It is important to remember that models such as this are designed to assist in developing self-awareness and the capacity to describe the ecology in which one works. The borders between each quadrant are ambiguous in most organisations, although it will be argued later that there is considerable advantage to be gained by creating and building strong borders between the quadrants and increasing the ritual elements of transfer between them. Each quadrant represents a particular coalescence in time and space of a form of community with varying degrees of temporal continuity.

Bureaucratic/Structured
common language

This is the formal organisation; the realm of company policy, recruitment procedures, financial controls, internal marketing; the entire panoply of corporate life that has emerged over the last century. It is a training environment. Its language is known, explicit and open, it the commonplace day to day language of the dominant linguistic group.

The organisation has high volumes of information and embedded knowledge to communicate on a regular basis to a diverse population. Some of this needs to be done within the context of skills training, some via company publications, or increasingly the intra-net and other forms of virtual collaboration. Increasingly the volume of information communicated by organisations results in data glut and a failure to create meaningful messages; messages that do not inform the recipient remain as data. In many organisations corporate communications are de-facto ignored by field staff who have too many other demands on their time. Filtering and the shift from *push* to *pull* information provision is one solution. Organisations are also starting to re-discover the value of human filters and human channels through the re-employment of Librarians, the use of story, video and other communication forms that convey higher levels of complexity in less time consuming form.

In looking at the other quadrants of the Cynefin model, we always need to remember that the formal organisation will always attempt to creep into other spaces through measurement and control, and this partially laudable endeavour needs to be controlled and channelled so that it does not inhibit the capacity of the organisation as a whole to develop to meet the demands of its environment.

Professional /Logical
Restricted expert language

The most commonly understood form of expert language is that of the professional: an individual who, through a defined training programme and associated job function, acquires an ability to use explicit specialist terminology; generally codified in textbooks and via references to key concepts or thinkers. The expert language and the time and basic skill it takes to acquire that expert language are form the barriers to entry and define the nature of the restriction. Although the opportunity to acquire the skill is known and available to all, in practice it is further limited by opportunity. Opportunity may be the most important and the

most often forgotten as it frequently depends on patronage or access to decision makers rather than need. Lack of opportunity may also result from social deprivation prior to commencement of a career, or during that career. There is logic to the creation of communities around these visible common affinities. Little or no ambiguity exists over their nature or the barriers for entry.

Such communities are working at a high level of abstraction. Abstraction is the process by which we focus on the underlying constructs of data. As Boisot (1998) admirably demonstrates, the process of abstraction is focused on concepts, not percepts. Percepts, "…achieve their economies by maintaining a certain clarity and distinction between categories, concepts do so by revealing which categories are likely to be relevant to the data-processing task" or information creation. "Abstraction, in effect, is a form of *reductionism*; it works by letting the few stand for the many". In practise it is easier to create a construct for knowledge as a *thing*; the atomistic nature of things lends itself to codification. Knowledge as a *capability* presents different problems, mostly attributable to the constant mutation of such knowledge as it accommodates itself to different contexts.

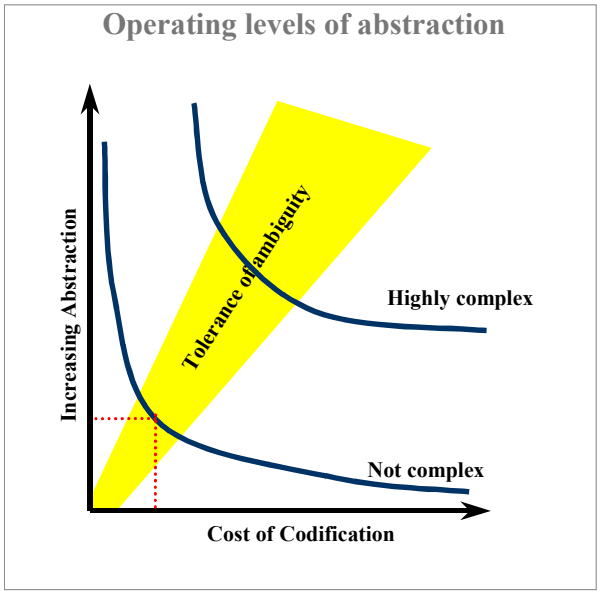

Figure 2

Expert communities are able to convey complex messages more economically than non-expert communities within their domain. Figure 2 illustrates the way in which the cost of codification decreases with the operational level of abstraction of that community. Attempts to share expert knowledge at too low a level of abstraction mean that the cost of effective codification increases exponentially and the act of codification becomes a negative act: the real experts dismiss the material as not worth of their attention, its back where they were in high school. Codify at too high a level and, although costs are reduced, the level of restricted access can increase to the point of elitism. In working with expert communities it is vital to understand the appropriate level of operational abstraction, and to understand the speed of decay in the uniqueness of the knowledge being shared. Highly complex knowledge with a high decay factor will rarely justify the cost of codification. As can be seen from Figure 2, the tolerance for ambiguity is broader for complex knowledge. This is because the populations able to use complex knowledge are generally smaller and will tend to have more homogeneity of value/beliefs systems

Informal/Interdependent
Restricted symbolic language

Informal communities are more rigidly restricted than Professional ones. The community, or individuals within it use criteria for the inclusion or exclusion of members that are unspecified and rarely articulated, but intuitively understood. Members in the grey zone between acceptance and rejection may be unaware of the process itself. Membership is always ambiguous and if lost can result in bad feeling arising from a sense of personal betrayal that goes beyond the normal cut and thrust of organisational politics in the formal organisation. In some cases groups are absolutely restricted; they are linked to past unique experiences and in consequence are not open to new membership. Such groups are also more readily

identifiable. Membership of an informal community generally transcends other loyalties and organisational boundaries. Such groups coalesce as a result of some form of stimulus: common experience, common values or beliefs, common goals or common enemies or threats. They are used to make things work – phoning an individual with whom one has worked on a previous project to help fix a problem, draws on previous favours and creates a future obligation. A relationship between individuals in field in bureaucratic functions and field operations can result in the processes of the organisation being used to facilitate rather than obstruct.

An examination of primitive symbolic or pictorial languages reveals some interesting features. Primary of among these is the ability of symbolic languages to convey a large amount of knowledge or information in a very succinct way. Each symbol has a different meaning according the combination of symbols that preceded it. The problem is that such languages are difficult to comprehend and near impossible to use unless you grow up in the community of symbol users. In some primitive societies the symbols are stories, often unique to a particular family who train their children to act as human repositories of complex stories that contain the wisdom of the tribe. The ability to convey high levels of complexity through story lies in the highly abstract nature of the symbol associations in the observer's mind when s/he hears the story, It triggers ideas, concepts, values and beliefs at an emotional and intellectual level simultaneously. A critical mass of anecdotal material from a cohesive community can be used to identify and codify simple rules and values that underlie the reality of that organisation's culture (Snowden 1999b). At its simplest manifestation this can be a coded reference to past experience. "You're doing a Margi" may be praise or blame – unless I shared the experience of Margi I will not know, if I shared the experience then a dense set of experiences is communicated in a simple form.

Organisations need to realise the degree of their dependence on informal networks. The danger is of chronic self-deception in the formal organisation, partly reinforced by the camouflage behaviour of individuals in conforming to the pseudo-rational models. A mature organisation will recognise that such informal networks are a major competitive advantage and will ensure scalability through automated process and formal constructions while leaving room for the informal communities to operate.

Uncharted/Innovative emergent language

So far we have dealt with the two forms of restricted communities in which a specialised language, explicit or symbolic, is developed to make sense of incoming stimuli. We now reach a domain in which such language does not exist because the situation is new. It may be that a completely new market has emerged, or that new competitors have appeared from nowhere or by lateral movements of brand: for example the entry of Mars into ice cream. The newness may be technology- induced, creating new possibilities: the growth of the internet is an obvious example, but we will see increasing levels of uncertainty as the impact of pervasive commuting starts to bite. This is the ultimate learning environment. We have no ideas of what it is that we need to train, and the language of our previous expertise may be inappropriate at best, or appear to be appropriate (even though it is not) at worst.

Faced with something new the organisation has a problem; it will tend to look at the problem through the filters of the old. The history of business is littered with companies who failed to realise that the world had changed and who continued to keep the old models and old language in place. In hindsight such foolishness is easy to identify, but at the time the dominant language and belief systems of the organisation concerned make it far from obvious. This is particularly true where the cost of acquisition of acquiring knowledge within

the organisation is high as this tends to knowledge hoarding and secrecy that in turn can blind the organisation to new and changed circumstances. Other organisations deliberately share knowledge, depending on speed of exploitation as the means of maintaining competitive advantage (Boisot 1998).

The requirement in Uncharted space is to make sure that the past does not blind us to the possibilities of the present and to the opportunities of the future. Assuming that the organisation realises that the situation is new, there are three models, derived from the other three *Cynefin* quadrants, which are used to deal with the uncertainty created:

1. ***Bureaucratic Quadrant:*** The organisation sets up a task force or allocates responsibility to individuals trusted within the organisational hierarchy and established within its command and control structure, including candidate members for such groups: management trainees, protégés and the like. The tendency of such formally constituted groups is to ensure that all interests are represented and functional conflict may result in a failure to understand the nature of the change.
2. ***Professional Quadrant:*** individual competence groups may have a responsibility to monitor changes and produce organisation response, or the task may be assigned to such a group by senior management. The danger of sectional interests is more extreme than for Bureaucracy. The restricted nature of this language, a strength in ensuring rapid and effective knowledge sharing, becomes a handicap where a significantly new situation is encountered. Individuals in Bureaucratic communities are concerned with power through the manipulation of resources and can adapt and change to new circumstances: they don't mind what they manage, as long as they are the managers. In Professional communities the individuals will have invested years in developing a particular skill or expertise and if they have made the wrong bet on the longevity of that skill set, they will be more defensive.
3. ***Informal Quadrant***: Solutions emerge without organisational intervention and are either used or more frequently ignored until it is too late. This can happen when individuals or groups within the organisation see or perceive that something has changed, and attempt to make the organisation aware of the issue or keep it private until they feel safe to expose the idea to corporate scrutiny, by which time it may be too late. A more recent phenomenon is that the individuals concerned take the idea out of the organisation in a business start up, often in competition. . Using Professional or Bureaucratic communities as least has the benefit of visibility: the decision makers are aware that something is going on and will often have been involved in its formation. With visibility comes responsibility. Making new sense in an Informal community is a fundamentally flawed behaviour. Facing a new situation requires awareness at all relevant levels of an organisation: it cannot be left to chance.

The organisation needs to recognise that in new sense making we 'see as through a glass darkly to a greater truth' to quote St Paul. New sense making takes place at a high level of abstraction with extensive use of metaphor and paradox. Most corporate decision makers are unhappy with both metaphor and paradox and it may be necessary to create mediating communities between the innovation new sense making group and the decision makers, or they will be listened to, but not heard.

How can we avoid the dangers discussed above? None of our current communities, formal or informal will make sense of the new without problems, some of which may be fatal. Based on an idealised representation of elements trialed over a series of engagements we can identify four elements that should be present for new sense making.

1. ***Team selection***. Most organisations do not really know what they know, and in many cases the solutions are already known somewhere in the richness of the Informal

community space. In new sense making what matters is to find the individuals who have access to the knowledge of the organisation together with a natural networking capability to access external knowledge assets. Psychometric tools such as Belbin analysis are useful to check that the necessary skills are present. However direct access to knowledge net-workers can be obtained by use of Network Analysis (Foster & Falkowski, 1999). This approach requires a series of "who would you ask if you wanted to know about X" questions, asked, re-asked and developed across appropriate segments of the organisation. The results of the answers are fed into a software tool borrowed from the Telecom industry and designed to reveal traffic density and nodal points. The graphical result of this work reveals the key individuals across a community and the key communities, within an organisation who even if they do not know themselves, know someone who does. These key individuals are often sidelined middle managers, secretaries and administrators. They are often more motivated by connecting people than progression within the organisation. These individuals, or communities have access to the knowledge assets of the organisation, and their selection by this indirect disclosure method prevents the competing self-interests that are likely in the event that the individuals are formally selected by virtue of their status in the Professional or Bureaucratic quadrants.

2. ***Language Disruption***. The team selection process above may bring together different expertise and may be enough to disrupt the language norms of the organisation. However it will normally be necessary to include other knowledge assets. This may include key customers, particularly those who are troublesome! Breakthrough developments can also usefully involve Lead-Users (von Hippel et al 1999) or competitors' customers. It is also effective to use knowledge assets from parallel environments. To take an example from the author's own direct experience: confronting experts from the marketing department of a major retailer with experts from missile defence systems. The two groups realised that they faced similar problems; there was very little difference between and incoming ballistic missile and an outgoing disloyal customer when you look at the problem without the constraints of previous assumptions. Disruption may also need to be continuous or directed at key points in the programme.
3. ***Humour and ritual***. The disruption of language can be reinforced by a degree of ritual around specific negative acts on behaviour. Another direct experience of with a team in a crisis on a systems delivery issue will illustrate this. The group concerned were over reliant on process and assumed that key checks were taking place because the process said that they would be. Increasing pressure of time, client dissatisfaction and the threat of legal action were increasing this particular fault. A simple ritual involving the use of a comical hat with elephant ears and an elephant trunk achieved the behavioural change. Following agreement by the team that assumptions must not be made, the first person caught making an assumption had the wear the hat until someone else was caught in a similar mistake. Judicious advance planning meant that the most senior member of group made the first assumption, which prevented victimisation of junior members until the ritual was properly established. Over the course of the next three days the hat rotated on a regular basis until it was no longer necessary: a significant behaviour shift had been achieved. Humour was critical as it diffused tension and criticism
4. ***Time, Space and Resource***. Innovation and lateral thinking are not always achieved through resource provision. There is some evidence that starvation of resource, provided it is not excessive, increases creativity and with it innovation; there are overlaps between creativity and innovation but they are not the same thing, although often confused in organisations. Starvation may also force groups into changing the rules of the game with consequent benefit to changing customer requirements and/ or innovation. In one experiment two groups of children were asked to compete in building a hut. One group

were given inferior materials and were unable to build as good a hut as their competitors. The disadvantaged group then attempted to introduce new criteria into the competition by, amongst other things, building a garden around the hut (Kastersztein & Personnaz, 1978). There are no simple formulas to apply here, and the environment or direct threat for which the intervention is planned may constrain the ideal allocation of resource. There are some principles that can be applied: the time allocated should always be less than is estimated, this increases pressure and forces the team to use other resources but their own; conventional tools and approaches that lead to conventional or forecastable solutions should generally be avoided and consciously removed; part time or full time is always a question, part time will naturally create more networking into the organisation, full time ensures focus; a unique physical as well as virtual environment is important, a social space where things can be pinned on walls, non team members can visit and conversations can take place.

The Uncharted space is one of the most interesting in the Cynefin model. We have explored some of its aspects and some techniques for intervention. However there are many other models and interventions that have been and could be devised. In particular, the above techniques relate to *point* rather than *continuous* intervention to force new sense making.

Good fences make good neighbours

The value of a concept-based model such as Cynefin is in its ability to assist in descriptive self-awareness within an organisation and to understand the flow of knowledge. By presenting clear boundaries between different forms of community, the organisation is more likely to recognise diversity and create alternative approaches to strategy determination and investment (Snowden 1999b). The nature of the flows can indicate the sort of organisation that we are dealing with and to some extend its likely future direction. Maintaining boundaries between communities can be vital in ensuring knowledge exchange. There is a wonderful poem by Robert Frost entitled *Mending Wall* that makes this point. It tells the story of two farmers who go out in spring to "set the wall between us once again". One farmer challenges the other as to the point of the task and receives a response which summarises the importance of boundaries:

"He is all pine and I am apple orchard.
My apple trees will never get across
And eat the cones under his pines, I tell him.
He only says, 'Good fences make good neighbours'"

The point is a profound one. The current circumstances may not require a wall, but the presence of the wall means that we are secure in our boundaries. Individuals need to know that the private learning they share with trusted confidents in Informal space will remain private. If they *believe* it may become public then the degree of disclosure will be inhibited. In a virtual community there are a broad range of interventions that can encourage this. In IBM Global Services the best part of 50,000 private collaborative workrooms exist de facto in Informal space, while Professional space is organised into just over 50 competences. The self-organising capabilities of Informal space allow a vast quantity of knowledge to self organise, allowing investment to be concentrated into Professional space. What then matters is the creation of flags and search techniques that allow the Informal communities to volunteer their knowledge into the Professional and Bureaucratic communities when it is needed (Snowden, 1999a).

The Cynefin Model was not designed to mandate behaviour but to allow an organisation to understand, within a holistic framework, the diverse portfolio of communities that constitute it. It focuses on developing a self-aware descriptive capability from which action can be

determined through collective understanding. Such self-awareness has to be rooted in the multiple birthplaces of the different communities and their developing history to which their members are naturally acclimatised.

Cynefin is different from *Ba* in that it is less concerned about tacit-explicit conversions; partly because it rejects the mind-body dualism implicit in Nonaka's SECI model, but in the main because of its focus on descriptive self-awareness rather than prescriptive organisation models. *Cynefin* provides a different and more holistic space for the "cyclical cultivation of resources" (Nonaka & Konno 1998) than that offered by the heirs of 'scientific management'. Those Newtonian models continue to apply, but like the Newtonians are confined to a known context. In an increasingly uncertain world we need new organic models that embrace paradox, utilise the ambiguity of metaphor and recognise the dynamic interdependence and interactivity of human agents and their tools, technology based or otherwise. We too often forget that Newton himself lived at a time of profound change, and was simultaneously both an alchemist and a scientist.

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