Cynefin: a sense of time and place

the social ecology of knowledge management

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 forms and management attitudes. 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. Managing a complex ecology requires a focus on interventions designed to trigger desired behaviour in the members of that ecology rather than attempts to mandate activity; it requires an understanding of the underlying values around which the various communities that comprise that ecology self-organise their knowledge.

An organisation that has been re-engineered has particular difficulties in making this shift. While that re-engineering may well have been critical to its survival, the mechanical metaphor that underlay process re-engineering focused on knowledge as a definable 'thing' that could be subjected to rational management. Individuals and communities soon learnt that if the value of their knowledge was not immediately self evident, then they would be prime candidates for ritual sacrifice in the next down sizing exercise. Equally they started to understand that if their knowledge was perceived as valuable, then it was safer to lease it on an as-needed - or more frequently as-requested - basis to the highest bidder. The focus of identity moved from organisational loyalty based on mutual obligation or inter-dependency (life-time employment in exchange for loyal service) to a more fragmented and uncertain space.

Towards a network of communities

There was of course no golden age of lifetime employment in the West nor, but for a favoured few, in Japan; even a cursory reading of economic history is enough to dispel that myth. However 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.

Camouflage behaviour

However, although a logical group may appear to have become a community there is also a danger that camouflage behaviour has set in. It may display some of the superficial aspects of a community, such as the admission of (non-damaging) mistakes from which the group can learn, generation of success stories regarding the re-use of intellectual capital, and innovative associations of ideas to name but a few. If the organisation has spent its resources in creating the group, then it would be churlish, or political suicide, to fail to exhibit the behaviours that the organisation has mandated. This is an age-old management dilemma; are people saying that they agree with me because they do, or because they feel they have to. We have learnt to live with the dilemma in hierarchical or matrix organisations, as the effects of either option are similar. However in the emerging knowledge economy, the divergence between the true belief of the volunteer and the compliance of the conscript can be the difference between success and failure. We need a new model for a new age, based on a greater degree of self-awareness and honesty than has been necessary in the past. Trust is, after all, the single most important pre-condition for knowledge exchange.

Culturally based sense making

Any such model 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. One of the paradoxes that will be explored later, for example, is that of maintaining rigid boundaries between formal and informal communities; the more rigid the boundary, the greater the knowledge flows across it.

The *Cynefin* model in Figure 1 uses contrasting views of culture based on the disciplines of anthropology on one dimension and a community-based sense making view of knowledge and language on the other. An early form of the 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. It provides an easily remembered model designed to allow an organisation to permit diversity of community type, within a common ecology of compatible purpose.

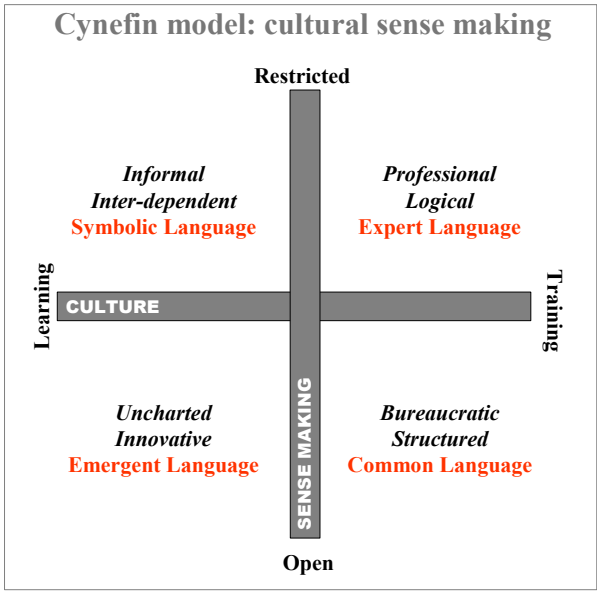

Figure 1

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 knowability

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 and implicitly rejects the dualism of much current knowledge management. This dualism often manifests itself in phrases such as, "a KM solution is x% technology and y% culture." Like all dualism this tends to a demonisation and deification of the extremes of the duality - neither of which is helpful. For technologists the culture question is one that they will solve with *the next* release and for the technophobes it becomes another excuse to revert to all that is non-scalable,

warm, fuzzy and *simply* human. The distinction was useful for a period to drag people away from thinking that knowledge management could be achieved solely through the procurement of technology. However it now disguises a vital aspect of any human culture; we are first and foremost a tool making and tool using animal. Our culture makes little sense without taking information technology, the latest manifestation of our tool making ability into account. The issue is to see the technology of Knowledge Management - search engines, document management systems, yellow pages etc. - as such a tool. The dualistic proposition has only arisen as a result of the tendency of technologists to require the bio re-engineering of human hands to fit their tools rather than designing tools that naturally fit those hands

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 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).

The pragmatic issue is not one of definition, but to create a workable model that makes an intuitive common sense impact on all levels of the organisation. Attempting to resolve two thousand four hundred years of debate since Plato first essayed *justified true belief* as a definition of knowledge in *Theatetus,* is unlikely to achieve this. What is important is to create an understanding of what it would mean to use knowledge while embracing that embraces its ambiguity. 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. Paradoxically the more formal the boundary, the stronger the knowledge flows across it. Weakening borders tends to alienate the learning dimension and not only fails to improve flow, but actively inhibits it. 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. On induction we need to communicate the basics of organisational life: how to claim expenses, reporting requirements, health and safety procedures to name but a few. The language we use is the language of the culture, in which the organisation resides, and in a multi-national will generally be the language of the country, in which the head office is situated, although international English is emerging as a distinct language in its own right, which often presents more problems for native English speakers used to dialect and cultural references, than it does for people who have learnt it as a foreign language.

While the bulk of the language is explicit, there are also organisational stories that are universal and form part of the language of the organisation. These may be founder stories, or they may be stories of key transforming events in

that organisations' history: near bankruptcy, key projects, major breakthroughs. There will also be a sub-text beneath the formal language and stated company values. For example, in five separate assignments I in different large international organisations during 1999, carried out by the author, the use of Story as a disclosure mechanism for cultural values identified "*Don't buck the process"* as a key organising principle underlying behaviour and working practice. None of the organisations studied portrayed such a rule as part of their induction process, nor would they have accepted it as reality in a formal setting. However such rules are learnt through private association and experience, and they are unlikely to be propagated by the organisation, even though their acquisition is a survival necessity for new members.

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 forms.

A large organisation is de-facto a networked conglomeration of different communities both formal and informal, linked to the centre in varying degrees of effectiveness. Some commentators are even forecasting a future of increasing home working, looser employment contracts and higher levels of uncertainty. While this may be true, and the jury is still out on that one, there will always be a requirement for a formal organisation in which communication

is explicit and structured. If nothing else, a significant number of individuals want to know where they stand. They want to belong to something and see a career path. Increasingly they will recognise that such paths do not exist within in one organisation, but they will exist across a series of organisations, predominantly in serial but in some cases in parallel. The danger is that the formal organisation with its linguistic and training norms intrudes into other domains where that structure will inhibit progress. 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. In many ways the domain of the Bureaucratic quadrant sould only consist of activities which are not better or more appropriately managed in the other three.

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 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.

In the context of the organisation such expertise may be externally and internally validated. Engineers, Lawyers, Accountants have external

professional bodies that largely regulate and control entry to the profession, linking tightly with academic institutes. A looser framework covers disciplines such as management, sales and marketing where success in practice can easily overcome lack of formal qualification. 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 lettering 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.

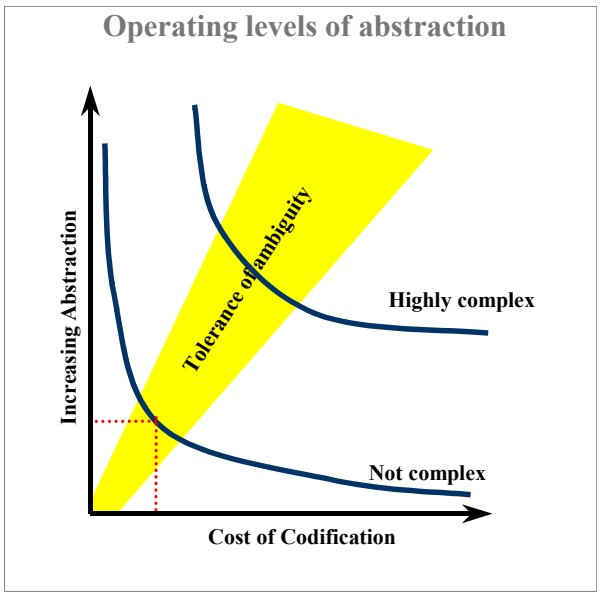

Figure 2

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

Identity and Status in Professional Communities

The expertise and the process of its acquisition form a key part of the identity and status of individuals within the community. The symbols of that status may well be ritually displayed: degree certificates, 100% club plaques for sales staff, scrolls indicating membership of an external professional association, pictures of formative experience associating the individual with other respected members of the community. Status in the early days is linked to clearly identified stages in the process of expertise acquisition: passing examinations, acquisition of relevant work experience. All members will expect to progress through these stages within certain acceptable time limits. Failure to do so means some loss of status, accelerated progression means increased status. After the early period the position becomes more ambiguous. Status may be linked to the capacity to find work or funding for fellow experts. It may be the consistent creation of highly valuable and original work, or it may be the ability to train and mentor new entrants. In a sales community, status it is clearly linked to the achievement of readily measurable explicit targets. Although application of these qualitative criteria is often unfair, the communities in question accept it. In contrast, for a group of scientists in an R&D function, we might expect greater concern over qualitative measures with a need for clearly demonstrated fairness.

Power and Ritual in Professional Communities

There is an obvious overlap between status and power in a professional community, however power does not necessarily correlate with status. In

R&D communities for example, power may reside in those individuals best able to handle the interface between their fellow scientists and the senior management and finance staff of the organisation. This ability may be resented, in which case there is a form of alienation between status and power that can compromise the identity and effectiveness of individuals. The ability to gain and sustain funding provides power that can be used or abused, in a bureaucratic organisation (and most large organisations are bureaucratic) *budget* substitutes for *land* in a new form of feudalism. Feudalism was often despotic, and occasionally used patronage to encourage creativity, but was never democratic.

Ritual is interesting. There are rituals in the gaining of profession qualifications and the giving of sales awards to take two examples. However they are rarely thought out. In medieval craft halls the transition from apprentice to journeyman was a highly formalised ritual, which took place in front of the entire community. The purpose of this ritual was not self-aggrandisement, but to establish the new place and responsibility of the individual within the community. More work needs to be done in this area, but there is a case to be made that we have lost the capacity to use formal ritual to enable transformation and learning. This is partly caused by an understandable, reaction to the pomp and circumstance often associated with it. While informal rituals abound as they satisfy a human need, formality has advantages at key turning points and its re-introduction may be worth considering.

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. At the other extreme, membership criteria may be clear and the group open in consequence. An example from one organisation is a group that meets virtually on a Monday morning to celebrate or mourn depending on the results of a weekend football match. Support of the football club transcends other loyalties and organisational boundaries. In general, such groups coalesce as a result of some form of stimulus: common experience, common values or beliefs, common goals or common enemies or threats. In addition there is a question of the degree of emotional intensity, which also has a significant impact on the duration of the community created, and its restriction on access for new members. Informal communities are by their nature ambiguous.

Symbolic language, the role of Story

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.

We observe the same use of symbolic language in modern organisations: primitive forms are remarkably persistent despite the superficial appearance of rationalism! Any community has its repository of stories that are used to suggest appropriate behaviours or teach in a variety of ways. Some of these

are fairly pervasive and visible. A rewarding exercise is to ask staff, who have been with the organisation for just under a year, what stories they have been told that summarise what it is to work for that organisation. Another such exercise is to ask staff who are known for their ability to mentor what stories of their own experience they tell their protégés following a serious mistake on his/her their part. These are often inspirational stories from the organisation's history of failure being turned into success through human ingenuity. Both types of story, once they reach a critical mass, can be used to identify and codify simple rules and values that underlie the reality of that organisation's culture (Snowden 1999b).

Strong stories become part of the private symbolic language of Informal and to a lesser extent Professional and Bureaucratic communities, the induction course may only take a few weeks, but it can take months or years to be told all the corporate stories to the point where one understands the oblique references to past events, or the appropriation of common words and phrases to reference *goodness* or *badness*. An experienced member of staff will use such words to association associate a current proposal with past success or failure to support or destroy that proposal. The proposer may not even be aware of the associations that innocent common sense language has triggered.

These stories convey complex meaning and can often be captured by a new breed of corporate historian (Kransdorff, 1998) with consequential reductions in induction time and improved staff retention and leadership: "Nothing serves a leader better than a knack for narrative. Stories anoint role models, impart values, and show how to execute indescribably complex tasks" (Stewart 1998). Story is a developing discipline in knowledge management, which has a major impact on strategy models (Snowden 1999b), communication and cultural change programmes.

Organisational stories exist in Professional and Bureaucratic space as well as Voluntary space, and Story has a major impact in all communities both as a knowledge disclosure technique and as a knowledge trigger (Snowden 2000)

there are also private stories linked to informal inter-dependent groups of individuals. These private, trusted networks are at the heart of any large organisation. Their members have worked together on projects in the past or all belong to a social club to take two different examples. They form a community whose identity exists within and without their organisational identity. In some such interdependent groups bonding is very tight due to some shared success achieved in the face of overwhelming odds, or through protective behaviour: rescue of group members from redundancy, covering up a fireable offence, assisting in a promotion; the list is endless. Such groups are able to communicate far more effectively than others. Coded reference to past experience or shared values, highly specialised language utilising a reference base outside of the organisational context, deceptive use of common place language to maintain camouflage, derision of an unaware third part. All of these and many more are the reality of the informal networks that for good or ill are a critical element of corporate life. Membership of such groups is always voluntary and uncertain. Failure to conform to the unwritten values and norms of the group can result in social exclusion.

Organisations need to realise the degree of their dependence on such 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.

Status, Power and Ritual

Status is very closely tied to leadership. Such communities often form as disciples around a powerful leader whose values and beliefs are de-facto assumed by the community as whole. In these groups proximity to and influence over the leader in these groups are key to the status of individuals. In cases where the leader is highly dominant, individual identity in the followers may start to blur to the point where the outside world sees them as clones. Such communities can be both positive and negative in outcome.

Often the dominant personality of the leader will allow new meaning to be created as the community's single, purposeful drive breaks through old assumptions and work practices. Equally, the subverting of individual identity may inhibit or prevent innovation. In contrast, the goal seeking behaviour of some communities may subvert the attempts of any one individual to gain a dominant position.

Power in Informal communities is difficult to isolate, as they are totally voluntary. Where individuals become dependent on a dominant leader, they may loose touch with this fact, but it is always there. Strongly held beliefs or goals may lead to martyrdom, but this extreme is rare in business communities. What are very common are initiation rites and rituals. Initiation may involve hazing ceremonies designed to test good humour, ore more serious tests of trustworthiness. Often such tests are not set up deliberately but occur in day-to-day discourse. Such tests may require totemistic behaviour such as a ritual condemnation of a common enemy. Rituals in Informal communities serve to remind members of the original coalescence point. An annual re-union of a group originating in a course or other programme may involve ritual re-telling of stories from the original experience, often with participants almost reciting responses to reinforce their role or position within the group. Communities formed around common beliefs or common threat will typically tell myth form stories that reinforce the belief and/or deride the enemy. Rituals may also test continued commitment, the Friday night drink and monthly bowling evening are events that one may miss once, but continued absence will lead to partial exclusion at best.

These rituals can extend to granting of membership. Often any individual within a group, particularly dominant individuals can grant membership almost at whim. The new member will be introduced to the group with some form or phrase that has specific meaning for the group: “Hi guys, this is Paul, he’s a *good guy*” effectively says that Paul is not one of the bad guys but is aware of who they are and is opposed to them. Equally the phrase “Hi guys, this is Peter, Peter comes from the London Office” may say to this particular group

"you don't know Peter but he's one of the bad guys so watch what you say": commonplace language has assumed a specialised symbolic meaning.

A Negative Aspect of Voluntary Communities

Informal communities exist for good or evil, but they do exist. Attempts to abolish them are foolish; it just isn't possible although you may make them invisible. While foolishness is also a natural component of corporate life when it comes to people, but in this case it is more than that: it is a missed opportunity. Informal communities are the repositories for knowledge both of *things* but more particularly *capabilities*. The scale and scope of that knowledge dwarfs what is possible in the formal organisation. Creating an environment in which such communities can organise their knowledge in private, and then managing interventions on the border between formal and informal knowledge exchange, means that the Informal-knowledge can be *volunteered* when it is needed on a just-in-time basis.

It is also the case that some Informal communities become an 'old boys' group inhibiting progress of innovative talent, securing promotions for the in crowd, protecting bonus payments, all through the manipulation of bureaucracy. Attempts to regulate this type of behaviour just provide a richer framework of rules to be manipulated. Paradoxically, reducing the rules reduces the capability of such negative groups to act as it provides greater common sense checks on the behaviour by the wider community. The point being made here is that the Cynefin model does not require toleration of Informal communities that actively damage organisation values. However, rule- based and directive management intervention is rarely successful. Interventions will be unique to each situation: using natural predators to balance the ecology.

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 and 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. There are three internal models that are used by organisations when faced with a new situation, aside from prayer:

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. If we use a community of trusted or trainee

executives, we are choosing individuals who are good at exploiting new circumstances for career progression and who represent particular interest groups within the organisation. The short or medium term goals of those interest groups may not coincide with the change associated with accommodating new ideas. 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. The formal language and stories of the organisation will create blindness to the new situation

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. If it is radically different there may not be a problem, the danger is where the difference isn't slight, but significant. Also, Professional communities may be more radically threatened by new circumstances than Bureaucratic ones. 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. Intellectual property in Informal communities is private and is subsequently may be volunteered in the right circumstances. This privacy is the only sensible and sustainable way in which the bulk of an organisations' knowledge can be organised. However in new sense making the process of moving knowledge from informal to formal is too haphazard, and attempts to force the flow to meet the time requirements of innovation will only damage future flows, even if they are effective in the first place. 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 quote St Paul (I Cor. 13,12). 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 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; when they looked at the problem without the constraints of previous assumptions, there was very little

difference between and incoming ballistic missile and an outgoing disloyal customer.. 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 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 enabled learning.

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: (i) the time allocated should always be less than is estimated, this increases pressure and forces the team to use other resources but their own; (ii) conventional tools and approaches that lead to conventional or forecastable solutions should generally be avoided and consciously removed; (iii) part time or full time is always a question, part time will naturally create more networking into the organisation, full time ensures focus; (iv) a unique physical as well as virtual environment is important, a social space where things can be pinned on walls, where 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.

Aspects of Community Interaction

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. 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).

Given that a large part of exchange takes place within a virtual space, it is also critical to look as issues of social responsibility. In a physical environment participation in a community is self-evident at both a conscious and unconscious level to all members of the community. In a virtual space this is more difficult. Recent work within IBM's Labs (Erickson et. al., 1999) has experimented with the use of social proxies in virtual space. All members of a virtual collaborative community are represented by different colored dots within a circle or *Babble*. The dots of active members cluster in the center, while those of members who fail to participate gradually drift to the edge of the circle. The social proxy was combined with persistent chat line – both synchronous and more recently asynchronous. Babble had some remarkable effects. It blurred "the distinction between work and play, encouraging a freedom that is often more productive and more enjoyable than the more formal exchange of other forums…. You're free to relax and joke and exchange half-finished theories, building freely on each other's ideas until

something new is born". Babble also became a distinctive place with multiple Babbles opening up to handle different topics. The visibility to the individual, and to the virtual community of which the individual is a member, induces responsibility by provided a virtual equivalent of the social clues that we get in day-to-day interaction in conventional space. The application of the principle of social translucence that underlies Babble offers a fertile source of future work on the dynamics of community interaction within the Cynefin model. Erickson et al (op cit) state "Socially translucent systems provide "perceptually-based social clues which afford awareness and accountability". They illustrate the concept with the case of a door that opens into a hallway at their office. People opening the door can hurt people on the other side of the door, a problem not really resolved by a "Please Open Slowly" notice that soon goes unnoticed by regular users. A glass window in the door would be more effective as it allows the door opener to perceive movement on the other side of the glass; it also brings into play the social rules of a "culture which frowns upon slamming into other people". However there is a third reason for the window. "Suppose that I don't care whether I harm others: I am still likely to open the door slowly because *I know that you know that I know* you're there, and therefore I will be held *accountable* for my actions. This distinction is useful because, while accountability and awareness are generally entwined in the physical world, they are not necessarily coupled in the digital realm".

Trust, responsibility and accountability are key requirements for human interaction. They operate at different levels in different circumstances. I may trust the organisation to pay me every month, but it does not follow that I will trust the organisation with a new, half formed idea; but I will trust people who share the same value/belief system that I do. Different issues and problems will have different requirements for community interaction and we need some form of decision model to determine which space (or spaces) we are operating in, which recognises the fluid uncertainties of social interaction.

The Uncertainty Matrix

Uncertainty is the new reality. The horizon for planning has been radically reduced over the past few years. Strategy thinking is shifting from thinking about products and marketplaces to focusing on resources and capabilities (Zack 1999). This increasing uncertainty requires a focus on the effective and immediate deployment of appropriate intellectual capital. Given that the most valuable intellectual capital resides in the network of communities that make up the organisation, understanding which type of community is most appropriate in different circumstances is important. The Cynefin model allows us to map different communities, and provides an understanding of the nature of their usefulness. The Uncertainty model of in Figure 3 has been used before (Snowden, 1999b) to understand different models of strategy. It and will now be used to create a framework for the partial determination of the applicability of the different communities in the Cynefin model. The matrix contrasts two types of uncertainty. In the horizontal dimension the further we go to the right, the higher our uncertainty about what it is that we are trying to achieve. In the vertical dimension, the further down we go, the more uncertain we become about our capabilities to achieve the objective. Where we are dealing with known objectives and capabilities, the Bureaucratic communities of the formal organisation are able to respond on the basis of their previous experience, strategic plans and formal process. However when uncertainty creeps in, the limitations of experience may well result in a form of corporate myopia. At the other extreme, where both objectives and capabilities are uncertain, we require the disruptive capability of Uncharted space in which the expert and symbolic languages of our restricted communities are disrupted in a creative and innovative new sense making process.

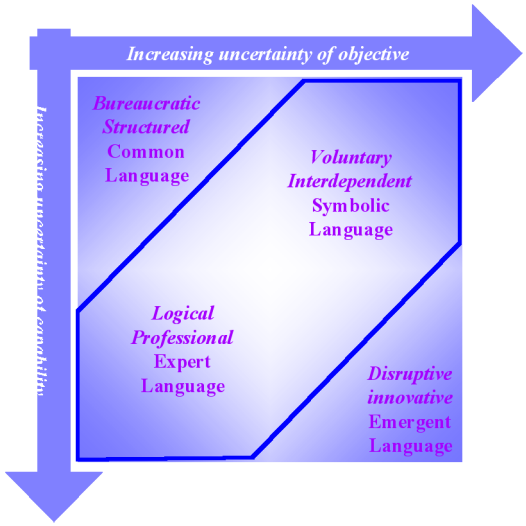

Figure 3 : Uncertainty Matrix

Between the extremes we face greater ambiguity. Informal and Professional communities are always in some form of dynamic interaction and solutions in this space will also involve some mix of the two as indicated in Figure 3. However the balance of interaction will differ. Where we are certain of our capabilities, the expertise of the competence based Professional communities is ideally placed to resolve issues, and the organisation should be prepared to delegate responsibility for action to or at least promptly accept recommendations from the formal custodians of their competences. We may qualify this by testing that our assumptions of known capabilities are still correct through the introduction of maverick thinkers from inside or outside the organisation as a validation and stimulating mechanism for our experts. The free right of challenge to conventional wisdom is an age-old tradition that goes back to the court jester and beyond. Institutionalisation of such challenge is an opportunity for organisations, and in the last decade has seen several international companies have experimented with Jester types roles, in one case the title of Jester was even used on the individual's business cards.

Uncertainty of capability, coupled with certainty of objective, is a difficult thing for an organisation to admit. It means that we have failed to manage our intellectual assets to make the right skills and talent available when we need it. This may be through an over enthusiastic adoption of process improvement, which has optimised the company for a specific context which no longer exists. Evidence of this can be seen in the significant number of organisations who have had to re-employ redundant staff as consultants. It may also be that the market is changing to quickly. In such circumstances the normal reaction is either to attempt to headhunt in the skills from a competitor, or seek external partnerships. Of these, the latter is often more effective than the former, as head hunting takes time, and the individuals hunted may not be of use without the team that surrounded them in their former employment. However too few organisations make use of their Informal space, which is often a richer and more reactive source of intellectual capital than external sources. It may include mavericks excluded by rapidly ossifying experts in Professional space or private interests. Discovery of private interest, one of

the easiest ways of enabling intellectual asset disclosure in Informal space, is often a fertile source of new resource. Equally, appeals for volunteers through bulletin boards, or use of 'node holders' identified through network analysis or similar are all means by which the organisation can first look to itself, before it looks outside. One highly effective method is to ask the leadership of the Professional communities who ***would not be suitable*****,** and then find and test those individuals; often they will be people who have challenged conventional wisdom or have a degree of self belief or conviction that does not permit the compromises necessary for comfortable existence in expert communities. A note of caution: in this space the political interests and possibly the survival interests of professional communities in the Professional space may be threatened. Reaction from such communities in these circumstances is often immediate, unplanned and unconscious, in the same way as the body's white blood cells respond immediately to invasion. Preparing for and disrupting such reaction, particularly when it takes the form of bureaucratic inertia, needs to be deliberate, planned and above all ruthless.

Alienated and Integrated Organisations

The Cynefin model has been applied to self-diagnosis and mapping within different organisations. It can also be used to understand the nature of intra-community knowledge flows. There are many examples of this, but to illustrate its use we will look briefly at three forms of alienation of an organisation from its Intellectual Capital, and one integrated or holistic form. Illustrative solutions to the various forms of alienation are suggested, but it should be emphasised that interventions to overcome the alienation of communities are nearly always incrementally progressive and context specific. No recipe is being proposed.

Expert alienation from strategy

In Figure 4, the main flows between communities take place in the horizontal dimension. The organisation has turned in on itself, focused on formal processes, hierarchy and status. It recognises its expert communities and

may even invest in their development and support. However when the chips are down, politics take over. New situations and strategy are directly managed by the formal organisation, often using external expertise in the form of expensive consultants to define future strategy, or even operational practice. Expert communities are informed of the strategy, once it is determined and they are expected to implement it. In extreme cases a group of executives, motivated by a desire to exploit the latest fad may even go off site to define their organisations approach to a new subject such as Knowledge Management and ignore their own experts who are inconveniently motivated by their belief in the subject. The organisation has become alienated from its intellectual capital. This may be, because of unnecessary (as opposed to necessary) barriers created between, say, a Research and Development Community and Marketing: poor communication and lack of responsiveness from the expert Researchers, compounded by failure to invest time in understanding by the Marketing function. The normal dynamics for formal and informal interaction between restricted communities takes place and may even be strengthened by a common enemy who not only doesn't understand, but also controls the purse strings. In such cases, the underlying value/belief systems may be so disconnected from each other that the only sensible solution is the introduction of mediating communities formed internally or externally

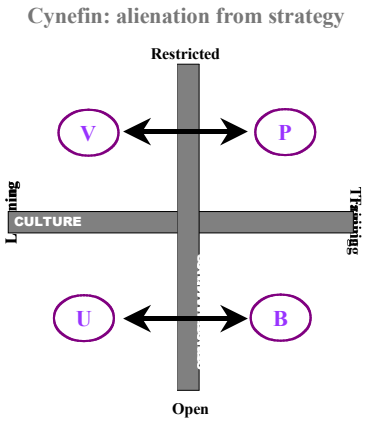

Figure 4

Alienation from the creative unknown

Where the main flows are vertical, we have a different problem. Here the bureaucracy and its professional groups of experts happily work within the reality of known space, ignoring the innovative capacities of the their own staff in Informal space, and changing markets and competitive activity in Uncharted space. This form is characteristic of organisations that feel themselves to be in a dominant position within their industry. Revenue and profit may well be at

acceptable or higher levels, but the organisation is assuming that change will be linear. Unfortunately, a step change in the environment may lead to such organisations floundering. In these cases, individuals and communities in the Informal space are often aware of the change, and may be dynamically interacting with new thinkers external to the organisation. They may even be attempting to be heard, but are ignored by the formal organisation. In such cases alienation is created not just between the formal and informal communities within an organisation, but also between the organisation and its current and future customers. The market usually forces dramatic change in this situation, but the organisation may not recover. The organisation is now blind to change and difference. Only some form of catastrophic intervention will result in change.

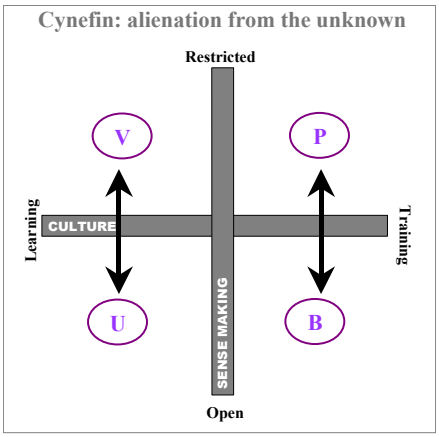

Figure 5

Alienation of formal from informal

Figure 6 shows a more complex situation, which could be characterised as a *pseudo rational* organisation. The formal organisation is open to and received stimulation from its environment, and passes new situations and problems to its known experts. The various Professional communities in turn receive stimuli from the environment and interact with Bureaucratic space to develop informed strategy that is then executed by the organisation to respond to change, or create new opportunities. Such a model is sustainable in situations where the expertise of the Professional space is constantly renewed and the environmental change is not too drastic. The alienation in this case, is the disconnection of the formal from the informal.

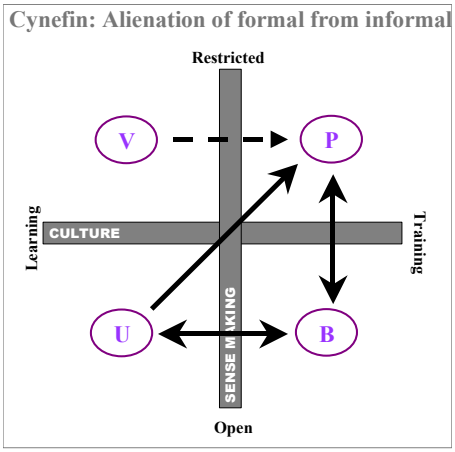

Figure 6

In practice, many such organisations may deny the independent existence of the informal. They will have invested in knowledge systems to support their communities of practice, and will be aware of the need to support dialogue between individuals through the use of Knowledge Café's and the like. Having done this, they may now believe that knowledge exchange will take place within the designed structures and may attempt to enforce the use of those structures through the use of knowledge targets in assessment schemes or the use of financial reward for knowledge contribution. Herein lies danger. The most common reason for knowledge retention is not power, for which financial reward and status based punishment systems may be appropriate: the most important reason is fear of abuse. Valuable knowledge, particular new or innovative knowledge, is precious to the knowledge creator, individual or community. Equally failure in a project is a valuable resource to the organisation, but the reasons for failure may be withheld because abuse of the confidence is anticipated.

Another issue with this model, common in knowledge-aware organisations, is that the expert communities are informed by activity in Uncharted space, but do not interact with it to influence it to create new forms and requirements. It is a lot better to create a market for Post-It notes, than to attempt to create a competing product after the event. Expert communities are often not risk takers, and innovation and new sense making both reward, and punish risk. One alternative to this approach is to change the dynamics of the flow, one model for which is suggested below.

Holistic professional

This model has been developed on the basis of the author's experience in professional service organisations, it also has proven applicability outside that domain in organisations with a strong need to interface Marketing and Research and may have wider application. Here the formal Bureaucratic space assumes a new role as a framework and control mechanism for dynamic networks of interacting sense making communities. In this model the organisation disrupts its expert communities by regularly moving them into

Uncharted space by the creative use of time, space, and alternative expert languages outlined earlier. Expert communities probably remain in existence for a period following the disruption, but the emphasis is on renewal through the judicious and informed creation of teams to make sense of new situations, stimulated by environmental change, or by the organisations own desire to initiate change. This means that new informal communities are formed in Informal space, based on the common experience and initiating event of the sense-making task. The organisation is then mature enough to allow that new understanding to coalesce in the ambiguous interactions of Informal space, from which new forms of expert knowledge, and in consequence new formal expert communities in Professional space will emerge and be recognised. The role of the Bureaucratic space is to initiate the disruption by a constant interaction with anticipated and potential futures. In practice the forms and structures of the organisation will be retained, and are necessary to provide security to the various members that comprise it. Knowledge flow however would not take place to a significant level in Bureaucratic space, which receives the conventional or stable information and knowledge flows from Professional space.

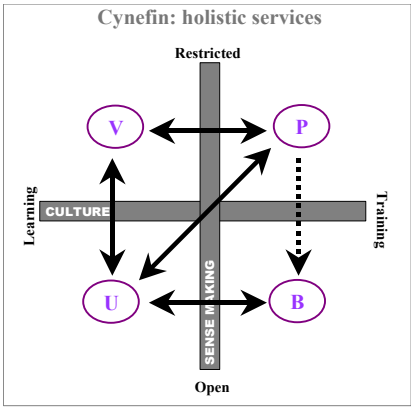

Figure 6

Reflections

An underpinning argument in all that has gone before, is that the organisation needs to perceive itself as an ecology of communities, which will have different value/belief systems from the organisation as a formal entity. There are no single solutions or models that will satisfy the needs of corporate governance. A portfolio of models, methods and interventions is necessary to support the complexity of the modern organisation. Too many organisations fail to realise that one can have a common purpose or goal, without common value/belief systems, provided those goals are not incompatibile (the double negative is deliberate) with the value/belief systems of relevant communities.

Compatibility of such value-belief systems may be desirable, but a limited degree of creative dissonance is necessary for growth. Organisational values will come to follow and conform to the values of dominant communities within the ecology. It is also necessary to recognise that the identity of individuals and communities is closely linked to these value-belief systems and the potential exists for abuse of power through organisational forms that alienate individuals from these evolved and historically rooted systems.

Current Knowledge Management is split between the mechanical, technology-based practice of the modern Newtonians, and the new thinking of Organic Knowledge Management. Properly understood it is *the developing body of methods, tools, techniques and values, through which organisations can acquire, develop, measure, distribute and provide a return on their intellectual assets. It is fundamentally about creating self-sustaining ecologies in which communities and their artefacts can organically respond to, and confidently proact with, an increasingly uncertain environment*. (Snowden 1999a)

For Organic Knowledge Management, a fundamental starting point is to recognise the current state of the ecology and its roots into the shared history of its communities and individuals. Once this is understood, then interventions can be devised to move forward. The concept that a desired future space can be designed and logical steps determined to achieve that design is specifically rejected. An organic approach recognises that in evolution there are many dead ends and many new opportunities that emerge during the journey. These new opportunities may be more desirable than the original goal; they are certainly more achievable. Such evolution requires a degree of redundancy of function that is best managed within the informal spaces that a mature organisation will permit and encourage. Goal- based programmes too often attempt to mandate desired behaviour and common values; worse they may just assume them. The reality of the values and behaviour of constituent communities rarely coincides with the declared values of the organisation, although camouflage behaviour may deceive senior managers into thinking that it does. A willingness to live with diversity itself permits a diverse and more innovative response to uncertainty.

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 scientific management.

The models of Newtonian science, adopted by the founders of scientific management, continue to apply, but we now know the boundary conditions of their applicability. In an increasingly uncertain world we need new organic models that embrace paradox, utilise the ambiguity of metaphor and recognise the dynamic interdependence & interactivity of human agents and their tools, technology based or otherwise. We too often forget that Newton himself was simultaneously both an alchemist and a scientist.