The Wisdom of Clouds

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Abstract

This paper describes extensions to the domain form of the Cynefin sensemaking framework for use in situational awareness and sensemaking for decision support. The extensions considered are of continuous variation (Cynefin with dimensions), internal diversity (Cynefin with clouds), multiple perspectives (Cynefin with identities) and change over time (Cynefin with dynamics). Recommendations are made for using these extensions singly and in combination, and examples of use are given. The paper concludes with some thoughts on the meaning of "sophistication" in decision making. It proposes that the most sophisticated use of the Cynefin framework and other such sensemaking devices is cloud-like, in the sense of having meaningful internal structure and variation suitable to the contexts and purposes of use.

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Introduction

In a 2003 paper in the IBM Systems Journal, Dave Snowden and I described the Cynefin framework as essentially a collection of five situational descriptions, or domains. In the several years since then I have seen the framework used many times in helping people move toward a more nuanced view of situational assessment. However, the form of Cynefin we presented in that paper was not and is not the whole framework. I think it may now be helpful to describe some additional aspects of the framework we chose not to highlight in 2003, to give those already familiar with its domain form more food for thought.

Cynefin with domains

Before describing extensions to the basic Cynefin framework it is useful to provide a brief overview for those unfamiliar with it. The basic framework distinguishes four contexts of decision making, or *domains*: known, knowable, complex and chaotic.

The known and knowable domains nest into a larger set of *ordered* systems: those that are complicated, like clockworks. In ordered systems the patterns you see tend to repeat on and on forever with few changes (and when there are changes, the changes have reasons you can discover). Causes lead reliably and observably to effects. Once you know enough about the system you can act on that knowledge, and you will rarely be surprised by the results (if you know enough, that is). The main difference between the known and knowable domains is in what

is already known and what has yet to be found out. Looking up toaster designs is an activity in the known domain, while revealing evolutionary history by studying the fossil record is a knowable enterprise. (But still, the fossil record stands still on approach; sufficiently careful explorations do not change it.)

The complex and chaotic domains nest into a larger set of *unordered* systems: those whose patterns are unpredictable even in the presence of perfect information. Patterns in complex space depend on interactions among entities, including observers. Sometimes complex patterns appear to be stable and may repeat for years or even centuries. But complex patterns, unlike complicated patterns, only repeat until they don't. When and how complex patterns will stabilize or disintegrate is impossible to predict. However, in complex space you *can* watch patterns appear and disappear and slowly get to know them. Sometimes you can "catch hold" of those you want and see if you can strengthen them. I think of working in complex space as like working with herds of cattle: the best cowboys watch for signs of unrest and stop it before it can get started; and when they need the cattle to do something (enter a feed lot for example) they know how to coax them in. They do this by living with, getting to know, and learning to respect the cattle. This applies for any complex system: control is relative to connection. Understand your part in the dance, including its limitations and peripheral nature, and you have a chance of guiding it the way you want it to go.

The most useful distinction between complexity and chaos is this: complex systems generate relatively simple patterns from the coalescence of huge numbers of varied interactions, while chaotic systems generate relatively intricate patterns from simple operations. For example, the lace-like contours of the amazingly beautiful Mandelbrot set are generated by the simple operation of squaring a number and adding it to itself (along with a constant). The difference between complexity and chaos for sensemaking is that since the patterns of chaos are not dependent on interactions between entities, it is not possible to live with or get to know the elements of a chaotic system. There have been some recent theoretical explorations of actions that may give some limited degree of control of chaotic patterns (most often by periodically stimulating the system in order to nudge it into more repeatable patterns), but these belong mainly to the mathematical domain. In practical life the ancient view of chaos as a void where control is entirely absent mainly holds true. The fact that chaos represents order of another sort (which I like to call unorder) does not make it amenable to manipulation.

The middle area of the Cynefin framework is called the *disorder* domain. This is the area where it is impossible to place the system in any other domain for lack of information and understanding. For a longer basic explanation of the Cynefin framework see Kurtz and Snowden (2003). (If you wonder why I use the older names "known" and "knowable" rather than the newer names "simple" and "complicated," it's simply because I think the older names work better. As with any conceptual framework, everyone is free to interpret and substitute terms as they like (whether they write papers about them or not).)

Cynefin and games

One of my favorite ways to help people understand the Cynefin framework is to consider the way we all learn the art of decision making – by playing games. Children’s games rehearse adult life and thus reflect the tasks adults face. We can expect them to cover the same decision making contexts that take place in more serious games (like international diplomacy), but in a simpler way that provides a good introduction.

Games played by the very young tend to start in known space. An example is the “memory” game in which all the cards in a pack are spread out face down and the child has to remember where matching cards can be found. The memory game is not really a game at all but an exercise. Children know where all the cards are once they have seen each card; they just have to remember what they saw.

As children get older their games tend to move into knowable space. These games are those which involve only a little skill – games like dominoes, war, old maid, chutes and ladders, tic tac toe, and go fish. The rules are simple, so the action is knowable. Simple heuristics work in these games, like card counting: if you count up all the cards you see, you can predict with some probability of success what cards are left in the deck.

Complex-space games are the social games of adulthood – poker, chess, rummy, go, pinochle, bridge. Subtle and mutable interactions among agents are important here: a “poker face,” bluffing, competing strategies, "psyching out" an opponent, changing team identities. You cannot learn to be a chess master or a poker shark by accumulating heuristics: you just have to play and play and play. Expert play is not something that can be described or codified. *Whom* you play in a complex game is a major contributor to how the game goes. This is not true of known and knowable games.

Few games are found in *purely* chaotic space, because most people want at least a little skill challenge to be involved. Games at the complexity-chaos border are popular with all ages, but are played more for entertainment than for any other reason. Examples of such games are speed (spit), pounce, spoons, and in general all fast-paced “party” games with loud buzzers or exclamation points in their names. In these games the thing that matters most – physical speed coupled with quick evaluation – is not something within the universe of social (complex) card playing. These games are even less learnable than complex-space games. You either have a natural talent at throwing matching cards onto a deck or grabbing spoons at a rapid pace, or you don’t. Whom you play does matter in chaotic games, but the effect is unpredictable.

I would place gambling, by the way, into the near-chaotic as well, not in the purely chaotic domain. I've noticed that gambling houses like their patrons to feel that they have at least one finger in complex space. It gives people something to feel they can control, which motivates them to continue despite the obviously poor returns. Rarely do people who gamble make no attempt to game the system or exert control; if they make no such attempt, they are not playing a "game" at all but merely enjoying a harmless diversion for other reasons — the novelty, the social experience, the status effect, and so on.

A distinction is often made between games of skill and games of chance. In fact, the distinction is an important legal one, since games of chance are more likely to be limited by governmental authority. One might ask: in which domains of Cynefin do games of chance fit? My feeling is that chance permeates the whole landscape, but skill varies. There is chance involved in a child's memory game — sometimes the cards turn up in easy-to-remember patterns and sometimes they do not. In fact games that are said to be "games of skill" such as chess and bridge include elements of chance as well, even if they are less obvious than the spinning of a roulette wheel. Perhaps one person was nearly hit by a bus that morning; perhaps another is irritated by perfume in the air; perhaps another is reminded by their opponent of their grandfather's gestures and finds it hard to want to compete with him; and so on.

In some games part of the game itself entails movement between domains. For example, solitaire

is a game that typically fits squarely into knowable space: the answers are there if you take the time and energy to find them. But I like to play solitaire with a variation, thus. I lay out a standard solitaire hand and begin to play. But as I go I keep changing the rules whenever it appears that the desired solution may not be achievable with the rules I am using. It is a double challenge to play both by and with the rules at once. In Cynefin terms this is a dip into complex space — loosening the rules in order for new rules to be influenced by the particular pattern of cards that has formed. I've since seen card games that use this same idea. The game Fluxx is an example: some cards represent objects to be collected, as in most card games, but some cards change the rules of what other cards mean and what the goals of the game are.

If you wanted to help children who were practicing their decision making skills by playing these different types of games, the last thing you would do is give them one technique to cover all possible games, from "memory" to bridge. Each type of support you might provide would have appropriate and inappropriate uses in the different contexts of game play. This is the value of Cynefin as a context-sensitive decision support device: in the same way that rummy does not invalidate dominoes, traditional methods of decision making (which work well in known and knowable space) are not invalidated by the consideration of methods for complex and chaotic systems. Rather they are *bounded* to those systems in which they will have maximum benefit.

Why extensions?

Cynefin was originally presented as a value-free sensemaking and decision support device and as such, it represented a step up from simplistic good/evil models (this situation is to be avoided, this is to be sought). In the 2003 paper we had this to say about the difference between Cynefin and simpler models:

> We make a strong distinction here between sense-making frameworks and *categorization* frameworks. In a categorization framework, four quadrants are often presented in a two-by-two matrix (for examples, pick up any management textbook or analyst report). Typically, it is clear (though often unstated) that the most desirable situation is to be found in the upper right-hand quadrant, so the real value of such a framework is to figure out how to get to the upper right. In contrast, none of the domains we will describe here is more desirable than any other; there are no implied value axes. Instead, the framework is used primarily to consider the dynamics of situations, decisions, perspectives, conflicts, and changes in order to come to a consensus for decision-making under uncertainty.

This was indeed an improvement and I think the use of the framework has borne out that statement. However, if taken in its simplest possible form, the Cynefin framework is still a pigeonholing device: it says that a situation can be seen as fitting into any one of several boxes or "bubbles" with clear and set boundaries between them. The boundaries are conceptual and not dependent on context or perspective. They do not move, and the space in which they are found is of discrete categories, not continuous variation.

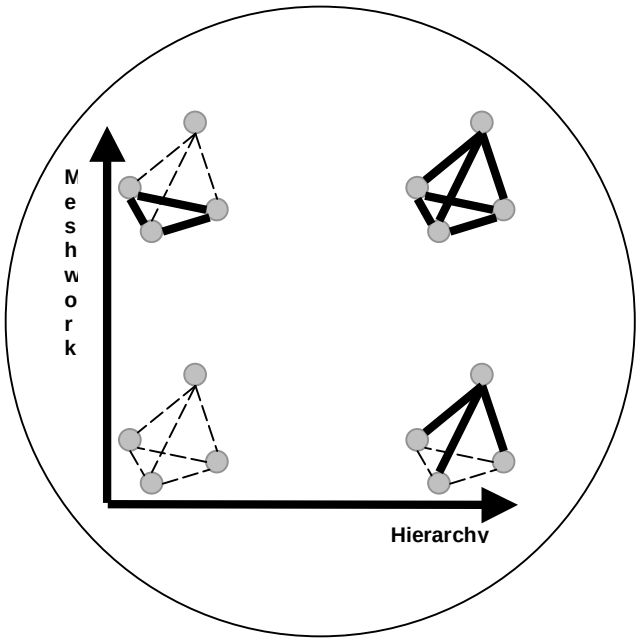
One reason I felt a need to write this paper is a pattern I have observed about how people see, explain and use the framework. From time to time I traverse the web looking over the shoulders of people who are talking about Cynefin. I see people writing explanations of it in their blogs after they have heard about the framework in some way. I often find this statement, which makes me cringe: "The situation is in the complex domain" or "The situation is in the knowable domain." There *are* situations and times when such simple statements are useful and required — situations where it is necessary to make a quick choice between available actions, for example.

But there many more situations where it is inappropriate or even dangerous to consider situations so simply. Considered in its full detail, a situation can never be in one domain only (or at least it is so improbable as to be practically impossible). There are sure to be *aspects* of a situation or *perspectives* on a situation or even *dominant elements* of a situation in one domain; but representing the entire situation with a single descriptor is not usually useful.

There are four optional elements to the Cynefin framework: dimensions, clouds, identities, and dynamics. (All of these elements were present in the original 2003 paper but were less emphasized than the contrasts between domains, which was our major point.) I will go through each of these in turn, describing their use and utility.

Cynefin with dimensions

One way to use the Cynefin framework is to remove all set boundary lines and make the space itself meaningful through the imposition of dimensions of continuous variation. The canonical axes for the Cynefin framework are as shown in the figure on the right. The strength of *central connections* grows from left to right, and the strength of *constituent connections* grows from bottom to top. I like Manuel de Landa's (1997) terms for these forms of connection: *hierarchy* grows from left to right, and *meshwork* grows from bottom to top.



The value of contextualization

It may be helpful to think of boundaries in a Cynefin framework as analogous to boundaries in phase diagrams, which describe material transitions between solid, liquid and gas phases in conditions of varying temperature and pressure. *Abstract* phase diagrams are similar to the generic (domain) form of Cynefin. They don't refer to any particular material or context and thus serve mainly to illustrate the phases of materials and the names of transitions between them. Such diagrams feature ideal pencil-thin lines of phase transition and a unidimensional triple point where all three material phases come together.

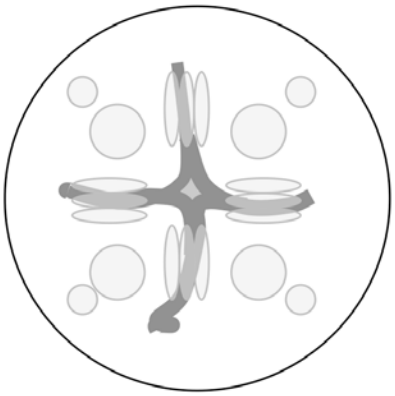
A contextualized Cynefin framework, by contrast, is more like an *empirical* phase diagram for a field sample whose constituent elements may not be fully known. Such a diagram *must* be derived through experimental testing. Empirical phase diagrams depart from the ideal based on their mixtures of solutions, imperfections, conditions of exchange with the external environment, disturbances, locations, and so on to many possible influences. Boundaries in empirical phase diagrams may include broad zones between phases in which the material consists of a slurry of mixed-phase materials. Similarly, a contextualized Cynefin framework may include broad or indistinct boundaries. For some empirical phase diagrams the triple point is not a point at all: it can be absent, or so large as to be called a "zone" rather than a point. This is analogous to a large disorder domain in a contextualized Cynefin framework.

In the workshop method described in Kurtz and Snowden 2003, generic boundaries are removed,

extreme corner points (thus gradient axes) are defined, and items are placed in meaningful space. Contextualized boundaries then *emerge* as people compare the items under consideration. This is analogous to testing varied samples in order to build a phase portrait of a material.

Mini-contextualization

So, if a contextualized Cynefin framework is a better decision making tool, what can you do if you don't have the time or resources to build one? (First, are you sure you don't? It may be easier than you think. A framework built with thirty items by one person is certainly not as complete as one built with a thousand items by ten people, but it still may be more thought provoking than you had expected.) Let's say you need to evaluate a particular situation in a hurry and can't collect sensemaking materials and build a contextualized framework. What can you do to move your thinking in this direction?



I would suggest two short exercises for broadening your thought if you cannot derive a contextualized framework. First, think about subdomains. In each Cynefin domain except disorder, you can envision four subdomains: one near each boundary, one at the extreme (corner) and one in the middle of the space; and you can expect that the dynamics of systemic behavior will differ in these spaces. Central behavior will meet standard expectations for that domain; corner behavior will push those expectations to an extreme (frozen order in known, zero predictability in chaos); and behavior near either border will be difficult to distinguish from the characteristics of the neighboring domain. So instead of saying "The situation is complex" you may be able to say "The situation is complex, but closer to chaos than to knowable space." Taking this approach is essentially placing pigeonholes inside pigeonholes, which is still categorization, but it takes you part of the way from the most discrete (5 pigeonholes) to a more continuous consideration of a situation (21 pigeonholes, counting disorder as one and adding one for each boundary). Practicing placing situations first into domains and then into subdomains can be a helpful mental practice. Just ask yourself another question: extreme, expected, verging on what? And the answer will almost always be fruitful.

The other quick mental exercise you can do is to take the Cynefin boundaries away for a moment and consider the situation on a tilted plane instead, using the abstract control axes of central and constituent connection. Thinking about "top down" and "bottom up" forces is another way to say the same thing. Once you've thought about a situation on a continuous gradient, replace the boundaries and see if your understanding has changed. Did something that seemed to fit into the complex domain seem more knowable when you took continuous gradations into account? Why did that happen? Did your understanding of the situation change on considering the gradients, or does the situation exist in an environment in which the boundaries themselves don't run through the middle of the space? What happens when you take dimensionless space and give it dimensions?

An example of this sort of continuization of discrete thought is what happens in the space between when you look at a book's cover (intuitively placing it into a class of books: popular, scholarly, entertaining, etc) and when you begin to read it. When you actually read the words that start the book you may revise your first discrete estimate by placing the book mentally on axes: how well written, how substantive, how important, how authoritative, how interesting, how

truthful, and so on. Your view of the book becomes more nuanced. When you look again at the cover you may see things you hadn't noticed before because they didn't fit the discrete assessment. You may even see conflicts between cover and contents. Have you ever seen a book that looked serious or deep but on reading it discovered it was shallow? Remember the disappointment (or elation if you were looking for a shallow read)? This sort of tacking between gross and fine understanding can be helpful in gauging many situations quickly to aid decision making (read this book or put it down?).

Mapping space

There is another way of getting to a contextualized Cynefin framework that came about a few years after we recommended using a group sensemaking workshop to do this. It is a different way, not better or worse. If you cannot convene a workshop but can ask people to tell stories and answer questions, you can derive the framework in another way.

A few years ago Dave Snowden, Alicia Juarrero and I were working together on a project for a government agency about helping people detect weak signals of upcoming problems by looking at public information such as newspaper articles. What challenges could government analysts find that could be addressed before they got too big to handle? We conducted several workshop experiments in which we asked people to consider complex situations (such as negotiations among nuclear powers) and identify various complex *features* of the situations — attractors, boundaries, forces, factors, modulators, influences, phases, and so on. What we found was that people had trouble identifying such features when asked point-blank for them. They often responded in a reflex fashion — saying what they thought everyone else might be saying, but not really able to "see" the features of the system. Even people who had studied in an area for many years could not build a complex system portrait with ease. We compared methods of using technical terms (like attractor and phase change), simpler terms (like force and heat) and metaphors (like storms and fevers), but we could not find a method that we felt helped people identify the contours of a system fully and easily.

During one phone call in particular Alicia and I talked about the difficulties people had in finding features in a landscape of meaning, and how they needed some kind of help, and how the help we were trying to provide was not helping them. We wondered what was it about the features they could not see. In what I must say was a great feat of lateral thinking, Alicia mentioned how Einstein's revelation had been in discovering that a planet has gravity because space-time is curved around the planet, not because the planet has a “thing” called gravity. (Said physicist John Wheeler, “Matter tells space how to curve, and curved space tells matter how to move.”) This was a critical insight and turning point: we began to think about what would happen if you asked people to describe *the space itself,* not its features. Would useful features *emerge* from the space if you did this? A quick look at the literature on topology showed us that *interpolation among point measurements* was a standard way of creating topological maps of geographic features. We already had much experience gathering and working with stories, which are essentially point measurements on geographies of meaning. What would be the result of interpolating among stories?

We then tested this idea. But to tell you about it I should stop and explain a bit about the use of landscapes as a metaphor for situations. (Excuse me, readers who know this already.) Topographical landscapes are often used as 3D portraits of dynamic system behavior in 2D phase space (meaning, covering variation on two axes). These "complexity" or "system" or "adaptive"

or "fitness" landscapes are widely used for understanding and decision making about complex systems. The landscape metaphor was first conceived by Sewall Wright in the 1930s to describe changes in gene frequencies in biological populations. Peaks on the landscape at particular locations (combinations of two gene frequencies) represented states in which fitness (survivability and reproduction) was highest. Populations "climbed" fitness peaks, but sometimes got trapped on intermediate sub-optimal peaks because the valleys between peaks involved such low fitness that their traversal was impossible. Rare advantageous mutations sometimes provided bridges to higher peaks, though usually mutations simply pushed the population downhill. Some considered this a valuable metaphor for thinking about adaptation and selection. Others pointed out that it was necessarily limited to considering two dimensions and thus was at best an over-simplification and at worst a contortion of reality (does a multi-dimensional surface have stable and easily identifiable peaks?). Decades later, Wright's landscape was adapted to represent the behavior of any complex adaptive system. In the process it was (inexplicably to my mind) turned upside-down. Systemic behavior along any two axes of interest (not necessarily gene frequencies) is more often represented today as a marble which rolls easily down into "wells" or "basins of attraction" but moves unpredictably on peaks or ridges. Whichever way you want to think about it, up or down, the metaphor is helpful for sensemaking, as long as its limitations are taken into account.

So, returning to our weak-signals story, the idea that arose between Alicia and myself was this. By asking people questions about stories or other sense-making items that *locate* the items in three dimensions — two dimensions of systemic behavior and stability — you can create a landscape of meaning from which features will emerge naturally. Basins of attraction (we'll use the upside-down rolling-ball version) will represent areas in which the system is stable; and a peak or ridge will represent an unstable region. Ridges roughly correspond with Cynefin boundaries, meaning areas of tension or energy in which the situation will not likely stay in a *precise* configuration for long but may transition to another location on the terrain. Thus the sudden formation of a new peak — as evidenced in the collected stories — would represent a weak signal of a possible upcoming problem which may merit attention.

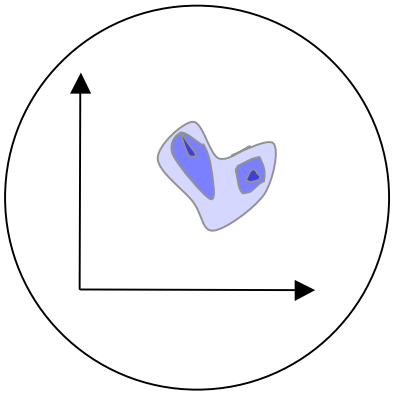
As a preliminary test of this idea, I collected some newspaper articles about aspects of large political situations, selecting stories that seemed to represent diverse perspectives and foci. I asked myself questions about each story, questions that would place each item on dimensions that seemed important to mapping such situations: stability (stable to unstable), connectivity (tight to loose), reach (local to global), capability (weak to strong), intention (accidental to intentional), diversity (homogeneous to heterogeneous), and conflict (cooperating to competing). While reading the articles the additional dimensions of morality (good to evil) and sophistication (civilized to barbaric) seemed to cry out for inclusion, since they were so often written between the lines. The exercise generated some unexpected features of the spaces (pairing up dimensions in all possible ways, with stability as the height dimension in all cases). To give one example, in the morality and sophistication landscape, the expected basin when all parties are good and civilized was not countered with a peak of instability where all parties are evil and barbaric — that area contained a stable basin as well, because evil is predictable. But there was a strong central peak where intentions are difficult to predict. In retrospect such a pattern makes perfect sense, but if you asked people to generate such features from considering the whole situation they might not have seen it. That is the utility of all mapping techniques: they move from specific to general in order to reveal insights that were hidden in plain sight. Since this research was done, several such projects have helped clients discover insights about issues by mapping

spaces based on stories and answers to questions in this way.

So: by asking people careful questions about stories (normally you would ask storytellers themselves, rather than collectors) you can map the items directly onto meaningful space, and features will appear in the patterns of the stories told. From this you can derive either a systemic-behavior landscape or . . . a contextualized Cynefin framework. To generate a Cynefin framework in this way, first gather a set of stories that is well distributed over perspectives, locations, or whatever will give you full coverage of requisite diversity; then ask questions that relate to the degree of central connection (hierarchy), the degree of constituent connection (meshwork), and the degree of stability in the situation. The resulting landscape, and the features you can see on it, will be a contextualized Cynefin framework, albeit a different sort than you can derive in a sensemaking workshop. Which is better? Neither; they are complementary. They represent different means of arriving at similar insights. The very best thing would be to do both operations in parallel. But keep them separate to avoid cross contamination. Differences between features in a framework derived from sensemaking and from mapping could be extremely informative if they are not mixed prematurely.

Cynefin with clouds

The second extension to domain Cynefin I will consider is to move the representation of the thing you are considering from a point to a shape, and ideally from a shape to a cloud (and then to more than one, possibly). When you do this the system is not "in" a domain or "at" a location, but "over" one or more areas of the space. A cloud differs from a shape in that it has internal details to it, like a probability density function, with the thickness or height or weight of some parts greater than others. (Note that I choose the metaphor of clouds because I am one of those people for whom 3D images and interfaces confer no advantage. Some people can do more metaphorically with mountains than clouds; I am not one of them.)



How do you use Cynefin with clouds? Just think of situations as having shapes and internal structure. Different aspects of a situation can have one or more "peaks" or "clusters" or "concentrations" or "coalescences" of characteristics, and these can range (project a shadow) across the landscape of meaning. You might say "here is a concentration at the chaos-complex boundary where new casual groups are forming, and here is another concentration near the complex-knowable border where some casual groups have become more formal, and notice this gap in the cloud, near the extreme of the complex region, where people don't want to list their groups in the directory but get the word out through other means" and so on. Gaps or thinnesses can be as useful and meaningful as thicknesses or heights. In essence you can use the metaphor of a cloud to help you map out the shape and structure of a situation, and this can help you notice dangers and opportunities you would otherwise pass by. Even thinking about whether a cloud is cumulus or cirrus or stratus could be a useful way of making quick assessments.

Note that using Cynefin with clouds requires using it with dimensions of meaningful space. If you can't say some internally dense area of a situation is "near" a boundary because spaces inside boundaries are non-dimensional, you can't talk about the internal structures of clouds. All you

can say if you want to use clouds without dimensions is that a cloud covers one or more pigeonholes (this is true even if you use 21 buckets instead of 5). There is merit to that, but not a lot.

Here is an example of how using Cynefin with clouds might work. I reuse this example in the next two sections (identities, dynamics) as well. You can read the iterations of this example as a sort of story of my evolving thought as I pursued the example through this and the remaining extensions to the framework.

The small town in which I live surrounds a large man-made reservoir whose breathtaking and peaceful views of mountains and lake attract tourists from nearby urban areas. People are kind and welcoming here; but as in many such resort areas there is a subtle undercurrent of tension between locals and the sometimes much more affluent visitors who come to play and relax.

In recent years a plan has been forming to replace the old bridge across the lake with a newer and stronger construction. So I, as a relatively uninformed and newish resident of the area, began to think about the bridge and this replacement plan, in order to explain the sort of Cynefin cloud I would construct about it. Some aspects of the bridge plan must be in the known domain — construction diagrams, standard approaches, accepted practices. I visualized this as a thin, even concentration of cloud matter over the lower-right (strong central connection) portion of the space. I reflected that the thinness of this cloud probably represents my lack of knowledge of bridge building and what is involved.

Some aspects of the project must bring together central and constituent connections. I would expect scientists to take measurements of lake currents and observe movements of the winter ice pack; there may be expert differences of opinion about the use of specific bridge designs in icy or windy conditions; the fact that the lake level rises and falls partly due to weather and partly due to the decisions of the reservoir regulatory body must have an impact on bridge design; and so on. I characterized the upper-right cloud as more dense than the lower-right, with a possible thickening toward the extreme, as expert opinion merges with natural patterns.

Another thought: there has been some talk about how the new bridge has been designed to accommodate tall sailboats, and about this topic I had heard some us-versus-them murmurs — would accommodating the few wealthiest "summer people" with their fancy boats create more trouble for year-round locals? I also had heard about some wrangling with the state and other funders to secure the necessary amount, and there was the issue of the town needing to buy up land from some people whose summer cottages were in the best places to put the new bridge. There occurred to my mind the grudging expectation that travel will become more onerous over the bridge and that I may have to plan longer trips to the supermarket for a while. But I also thought about how watching this bridge go up over the next few summers could be a great learning experience for my family and what a thrill it will be to watch the girders lowered into place and what might be the best places to stand to view the construction. I thought about how there has been a promise of a new walking trail over the bridge and how nice it might be to take a picnic lunch over to the central spot and enjoy the beautiful lake view instead of merely pausing in the car for a minute when traffic is light, as we do now. These issues, both positive and negative, all seemed to form a variable cloud over the complex space. A churning concentration seemed to loom high over the complex-knowable border as those in charge of making the bridge happen explored possibilities and exploit opportunities.

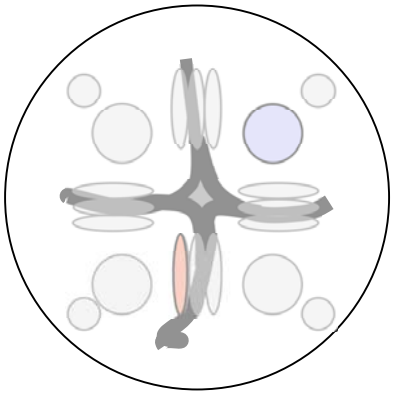
The chaotic space didn't spring to mind spontaneously when I thought of the bridge project; but

when I brought my gaze to it the famous images of the Tacoma Narrows bridge and its spectacular collapse came fleetingly past (along with a thought that I really ought to read any information available on the track record of the engineering firm hired to do the work). Every year someone gets hurt on the lake or around the bridge, especially in cold weather, and I wondered what safety measures would be put in place for people walking and driving on it. I thought about how a neighbor told me about deer standing on the middle of the bridge early in the morning, and how he waited in his truck quietly but could not stop them from plunging over the side into the water deep below. I also remembered tensions when lake levels had been exceptionally high or low, and that people with homes and cottages around the lake began to complain that the regulatory body that controls the dam operation (and reservoir level) was not taking their needs into account. I imagined similar clashes surrounding the building of the new bridge, if it seemed to favor visitors rather than locals, if it took forever to finish, if safety wasn't a high enough priority to satisfy worried parents, and so on. These patterns of unease came together to create a small but dark and shifting cloud near the complexity-chaos border.

How did this "cloud picture" of the bridge situation help me make decisions? To begin, I wanted to learn more about the bridge design (known). I wanted to find out how well the design takes local conditions into account (the thickness in the upper right corner). I wanted to find out what sorts of compromises have been made and how the planners have kept everyone happy, and I reproached myself for not making my preferences as a resident known more than I have (that's the complex-knowable churn). I saw the necessity of finding safe places to watch the bridge construction to balance the opportunity for the growth of new understandings (complex) with safety (moving toward chaos). I wanted to hear more about the engineering firm and their safety record, and I decided to ask some questions about that foot path before I could promise my family a picnic on the bridge (that's the chaos-complex part).

You can see how going from thinking about the bridge plan as a monolithic thing, able to occupy only one space, to thinking about it as a pattern of coalescences improved my ability to respond to the situation. If I had confined myself to a simple domain model and allowed myself only to place the bridge plan in one domain, I'd probably have put it in the known domain only: a known hassle. But using the Cynefin framework as a cloud mapping device to expand my thought brought me new things to think about and new things to do.

Cynefin with identities

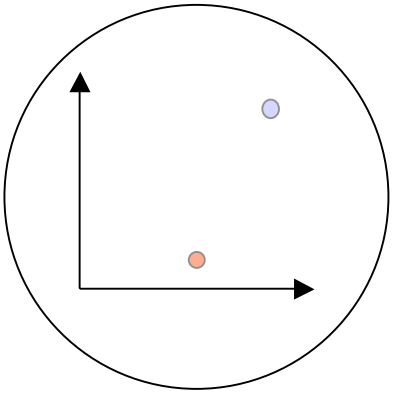


The next extension of basic Cynefin I want to talk about is probably my favorite one: considering *identities* as they relate to a situation. Take any aspect of life, human or otherwise, anywhere, and you will find human identities flocking around it. More importantly, paying attention to the identities flocking around it will bring you advantages you could not possibly have achieved otherwise. Perhaps natives and immigrants have different domains or points or shapes or clouds; or rich and poor; or government and industry. Perhaps considering a situation with traffic flow in the forefront creates a different shape than considering the same situation and paying particular attention to (but not isolating) protest movements, or child care, or newspaper distribution, or bird migrations. One might argue that traffic flow is not an identity:

but it involves the formation and action of identities.

Note that I am not advocating the consideration of *parts* of a situation in isolation. Situations that involve human affairs can rarely be taken apart and put back together as though they were machines. But a whole situation can be looked at in many ways and from many perspectives *without* taking it apart.

The utility of broadening Cynefin to consider multiple identities lies in two things. First, it *broadens your scope* by introducing you to factors and influences you had not considered before. And second, it *deepens your focus* by examining in greater detail factors and trends that are so obvious they are usually overlooked.



To consider some of the identities involved in my extended bridge-cloud example above, I will continue the story of my consideration of the bridge project. This time I asked myself to think about identities in the situation.

I am a several-year resident of the rural area around the bridge, an immigrant from more urban lands "downstate." As such I fit into the community in a unique way that puts me half-in, half-out of certain identities. I was not born here, placing me outside the tight circle of true locals; but I do live here "full-time," unlike the ephemeral summer tourists and long-time camp owners (these are another two distinct groups with different sets of privileges and expectations). As a full-timer I get points for learning to love the the waist-high snow and the biting bugs. But nevertheless, as in many rural areas, we immigrants have to earn our places. After twenty or thirty years I may be carefully let in on some secrets. I make a special point when introducing myself to explain that I grew up in a rural area similar to this one in another state, because this gives me special privileges as a "country girl" that suburbanites can never hope to have.

I don't live on the lake, which excludes me from another group with special privileges regarding lake matters (though my contention that the the forest is better than the lake endears me to off-lake residents). The reservoir was created by flooding a river valley some 80 years ago, against the wishes of most local residents; so the people who can remember being upset (remembering grandparents being upset is permissible) puts you into the center of certain social circles. My position is far from that vaulted height, yet high enough to know about the correct way of waving and nodding to partake in that prescribed ritual. I come down on the "quiet" side of the divide between those who want things like more power boats on the lake and more snowmobile trails in the woods, and those who prefer activities like kayaking and hiking (this is a position that marks me as an outsider to many). But that's partly balanced by my membership in the "we want cell phone towers now" group, which is mostly locals (the tourists like the pristine look without towers; we say that's nice but we want the safety of cell phones). I'm not in the group that goes to public meetings often and volunteers frequently (some immigrants earn points this way: even some suburbanites have been thus redeemed). Though I do what I can — as anyone knows, stopping by the town hall from time to time, reading the local paper, expressing irritation about the driving habits of "summer people," and becoming known to the recycling guys are activities that are pretty much required to participate in the discussion — at least, in some discussions. There are other discussions, like those among the wealthier summer people, from which some of these qualities and activities would exclude a person. All in all, a fairly typical neighborhood.

Putting all of these things together, the Cynefin cloud I developed above represents the perspective of my particular constellation of identities. As I thought about all the elements of local identity, I considered how my understandings of the bridge project will inevitably differ from the perspective of a born local who is highly involved in town matters and owns a power boat and snowmobile, which will again differ from that of a sailing aficionado who has heard about the lake and has been invited to join relatives there. I began to overlay my Cynefin cloud with clouds representing the perspectives of other constellations of identities. You can see how this sort of exercise would be essential to understanding the bridge project in its entirety — say if you were a planner deciding where to place the bridge, when to build it, how to design boat channels and pedestrian paths, which architectural firm to hire, whether to hold a design competition or simply appoint someone to be in charge, how to raise funds, and so on.

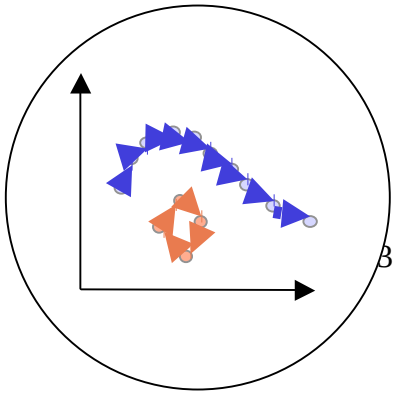
You can consider Cynefin with identities by envisioning their perspectives as point, shape or cloud presences on separate layered frameworks, floating in vertical space like a geographic information system (buildings above roads above streams). Even such a simple device as drawing layers on paper, especially if you can discuss the drawings with others as you go, is helpful. Just start drawing shapes and patterns, and talk about what you are drawing. Another way to do this is to draw perspectives on the *same* landscape, overlaid and even interacting. Where do the perspectives apply force to each other? What does it mean that the city planner cloud is thinnest where the supermarket shopper cloud is thickest? Why are the rural and urban police forces "thick" in such different places? What explains the relative uniformity of the customer experience compared to the spottiness of the employee experience?

One of the most fruitful ways to work with Cynefin when it comes to identities is to have multiple groups of people generate criss-crossing contextualized frameworks. To do this, ask people to generate descriptions of their own perspectives on a topic *and* of the perspectives of other groups. Criss-cross framework building can be especially revealing when the issues separating groups are difficult to articulate or hidden deep in taboo topics.

Cynefin with dynamics

The final extension to domain Cynefin is the consideration of time and change. In our 2003 paper Dave Snowden and I highlighted several dynamic patterns that essentially showed points moving among discrete subdomains. This is *almost* the simplest way of considering dynamics (a point moving between domains would be simpler), and consideration of dynamics can be much more involved. It is when dynamics are combined with other dimensions that they become the most powerful.

It is particularly useful to combine dynamics with continuous dimensions. When space is continuous rather than discrete, dynamics can include speed and acceleration as well as location. For example, there can be repeated patterns of movement that only appear in some circumstances or from some perspectives. These patterns of systemic behavior can be telling.



For example, say this pattern appears repeatedly in a town. The town's mayor calls a town meeting to discuss an important collective decision. The meeting is well advertised, both in the town newsletter and in flyers all over town, and much lead time is scheduled; but only a few people attend. Discussions are held

nonetheless and the decision is made, and the result of the decision is described in the town newsletter. In the following weeks dozens of people complain to the town hall that they were not included in the decision! The astute mayor, seeing this pattern happen again and again, attempts to change the dynamic pattern by coming up with several additional ways people can contribute to the decision making process. Still the pattern repeats itself: nobody responds until it's too late to respond. There are many possible ways the mayor could stimulate a new pattern of response. She could hang around popular eateries and ask people if they'd like to talk to her about the issues. She could ask people to appoint someone to speak for their block, and it would be that person's responsibility to represent the views of their "constituents" in the decision making process. She could send after-the-fact complainers special invitations for the next town meeting. She could hold meetings only *after* posting deliberately provocative decisions (which she was actually ready to retract) in order to work within the dynamic instead of trying to create another one. The process of choosing between these options (and finding more) would be improved by the mayor's ability to move things around in meaningful space.

Another aspect of combining dynamics with continuous variation is that it opens up boundaries to dynamic change: what happens when what it means to be ordered has shifted? Is the same degree of central connection orderly in one situation, or from one perspective, and chaotic in or from another? In the example above, perhaps the mayor's idea of what constitutes orderly discussion holds her back from understanding the order residents see in their responses?

The tool of highest utility when using Cynefin with dynamics is narrative. Building and telling stories helps people to think about change, whether their goal is to make sense of past events, come to decisions in the present, or plan for possible futures. You can use Cynefin with storytelling by simply considering time in the drawings you make or items you place (though there are more elaborate methods such as story construction exercises). You can make a sort of comic-book series and draw clouds or points or shapes moving on it; move physical markers that represent different identities; stand in portions of a room and move around. How you visualize movements in space doesn't matter, and there are many ways to do it. Some people think more by drawing, some by talking, some by placing or moving. It doesn't have to be perfect and you don't have to build beautiful constructions. Keeping things "sketchy" is in fact a great way to free your thinking and consider a broader view.

Now I'll continue the local-bridge story mentioned above and bring dynamics into the picture. The day after I wrote the above examples about the bridge project in my village, I received a letter from the town supervisor. Funding for the bridge had fallen short of bids received from building firms, and the town was asking all residents to petition their state government representatives to help the village make up the remainder. The letter mentioned the age of the bridge and its importance in uniting the community (which was split when the lake was created). It told about how a possible future condemnation of the bridge would significantly affect the lives of everyone around it, since driving around the lake would add many minutes to all trips for food, work and play. Even emergency crews would have to drive around the lake if the bridge was no longer safe to use.

Besides noting the coincidence of receiving this direct letter (the first ever) on the day after I wrote about the bridge, three things struck me about the letter. First, I had not known that the bridge was so old — as old as the lake itself. The very idea of the bridge being condemned and closed for safety reasons was something I had not considered. Driving around a bridge we use often would change our lifestyle in a major way, but plunging off it into the cold water would

really put a damper on things. As I looked at this letter and thought about the Cynefin clouds I had envisioned just the day before, I experienced a feeling of falling: the whole weather system was shifting to the south as my view of the bridge coherence fell apart. The revised age of the bridge increased the weight and thickness of the chaotic clouds — just how safe is an 80 year old bridge? Should we be driving over it even now? In Google Maps I dragged the trip line away from the bridge and confirmed that the trip to our favorite grocery store would nearly double. The new awareness of the bridge's age also increased the knowability of my sense that something is truly going to happen, soon, that will change our lives in significant ways. The petition-your-representative message increased the cloud in the upper-middle area to an expanding flurry; the knowable extreme thickened as I began to consider the difficulties in arranging the necessities of life in a new way. The cloud in the complex-chaotic area grew as a little voice in my head noted the probable coincidence of the amount of over-budget cost with the fancy high sailboat allowance. In the complex extreme I wondered how well I trust local officials and safety engineers in general to tell me whether the bridge is safe or not. I remembered a recent bridge collapse in Michigan, which I had barely noticed. An online newspaper headline had new meaning: "Bridge collapse spotlights America's deferred maintenance." The article (this was the Christian Science Monitor, August 3, 2007) went on to say:

> In the federal government's rating system, any bridge that scores less than 80 – on a scale of 1 to 100 – is in need of rehabilitation. A bridge scoring below 50 should undergo reconstruction under federal guidelines.

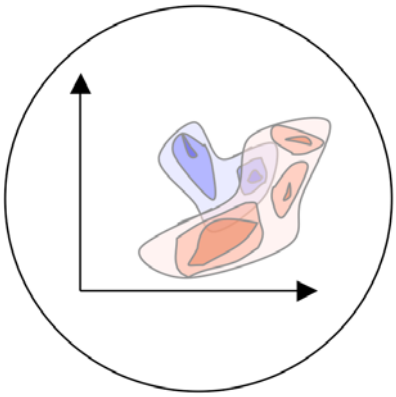
I immediately resolved to ask the powers that be what the rating of our bridge might be. This would bring more cloud mass into the right side of Cynefin, from my perspective — more central control in the situation (me being the central force in this instance). I found a web page about the bridge on a state web site — but it was full of technical jargon (extreme knowable) and could not help me make a decision about whether to drive on the bridge. The proposed starting date of construction being set in the previous year did not give me confidence. But I did discover that the fancy sailboat clearance had been included at an intermediate level, which reduced my worry about only some needs being considered. For a while.

Soon after that I found a record from a public hearing nearly two years ago (which I did not attend and paid no attention to) about the bridge. Evidently the project to replace the bridge began ten years ago. That new fact thickened both the top-most portion across the space (more connections than I thought) and the bottom-most portion (if it has taken this long to get this far, it may take much longer to get the new bridge ready to use). There was no particular bridge rating in the presentation, but the statement "advanced state of deterioration" caught my eye. Clearly things were more serious than I had understood.

The last portion of the record of the public meeting was fascinating and troubling. It populated the complex domain for me with abundant cumulus storm clouds. Here were the discussions about why the compromise bridge height was still strongly opposed by local residents (some of whom I know). One resident mentioned that a higher bridge would encounter more wind and create a stronger slope, both of which would endanger local people driving across it in winter ice and snow. I've driven across that bridge in strong winds and know exactly what he was talking about. One commenter said, "It has to be safety first, not recreation first." But another commenter mentioned how people who had wanted a still taller bridge were disappointed with the compromise, and still another mentioned the money sailors and other tourists would bring to the region. One person said that people who wanted a taller bridge could take their money and go

elsewhere, and that we cared about the safety of our kids more than that. While reading this I began to "kick myself" quite vigorously for my lack of involvement in this obviously important issue. I wondered whether talking to some of the people involved, even now, could make any difference.

A document of official responses to comments made in the public hearing pushed some of the cloud mass over into knowable space. The response to the height-safety link comment was that the proposed grade was "lower than" the standard maximum grade. This was an obvious retreat into the upper-right-hand corner: a favorite trick of experts which typically involves the hoarding or obfuscation of information. Why did they not provide information on the maximum grade? Is it a *bit* lower or much lower? What is the utility of hiding such information? Is it deliberate or accidental? Do the "powers that be" assume residents cannot or need not understand? Do such standard grades take ice, snow and wind into account? Do they take the danger associated in driving far above a frozen lake into account? And, are the opposing comments realistic in their expectations? Perhaps they are too far into the complex, or the complex-chaotic border, to respond in proportion to the actual danger? Perhaps they are ill informed and over reacting? (If so, is that their fault?) The scientist in me wanted to sort out the issue and get to the facts, all of them, before I jumped to any conclusions. But I noticed the subtle bias in the order of the response document's list of factors to be considered (1: maximizing watercraft passage, 2: maximizing safety), and wondered about the possibility that the powers that be really were giving more credence to the views and needs of the wealthy, as some said. I also considered the possibility that my reaction was human but erroneous and that other reactions might be as well.



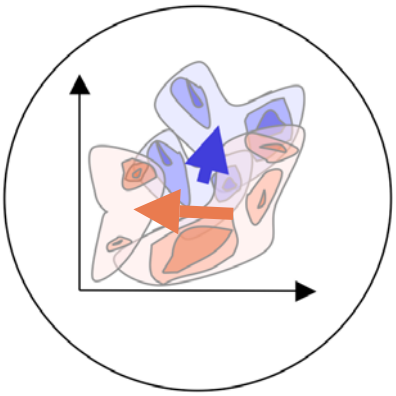
The next day the clouds shifted yet again when I raised my concerns to my husband. He, coming from his slightly different identity, pointed out three things. First, the "they don't build 'em like they used to" argument says that an 80-year-old bridge might actually be more sound than a newly constructed bridge. (In fact the new bridge plans called for a 50 year life span.) Second, various people have vested interests in declaring the bridge unsafe, because they will benefit from the income to replace it. And third, we only use the bridge, on average, once a week; say every five days to be conservative. Estimating that about a thousand cars and trucks use the bridge per day, even if the bridge were to catastrophically fail while a car was driving over it, which is extremely unlikely to begin with, we would only have a 1 in 5000 chance of being in the car that was on the road at that moment. Obviously, in my husband's Cynefin space the chaos region of the space was populated with thin, high clouds, not the thunderheads in my version. This did help to thin out the space in my version somewhat (but still, a mother worries).

A few days later my husband met a neighbor on the road, who added this upsetting fact to the mix. What the town letter did not mention was that there *had* been adequate funding to build the bridge five years ago, but the evidently overwhelming need to raise the bridge to accommodate the passage of several expensive sailboats per year had created delays that caused the funding to drift away, presumably to fill some other pressing need. More complexity: a perfect storm of complexity.

Out of all of this I finally grew a need to form and ask several questions of neutral and trusted people as soon as possible. A new Cynefin layer (a new identity?) began to form, with areas of

concentration in several portions of the meaningful space. Most of the cloud concentrations were initially toward the upper right: a need to gather facts and answer questions. A cloud in complex space that represented making a very late attempt to be heard hovered, though in a sheepish way. As the action clouds built it became clear that they would undergo many more changes over the next few months and years.

Another gradual development, concurrent with the action-identity layer, was the formation of *alternative* Cynefin clouds — fictional dynamics of what-if situations. I began to think of these things: what if the old bridge is closed? Soon? What if we decide not to use it anymore anyway? What if we decide to use the new bridge only in fine weather? What would happen if we changed where we shop? Where we meet people? What does this mean about living here?



I said this example would be about dynamics, but it turned out to be an example of all four extensions working together: dimensions, clouds, identities and dynamics. I presented the story about my own thought processes as they evolved and reacted to conditions. But any group of people, of any size, could go through such processes together. The critical point is that using the Cynefin framework as a sensemaking device improved my ability to simultaneously consider the depth and breadth of the situation, to juxtapose perspectives and facts, and to come to decisions about my own actions. When dimensions, clouds and identities are combined with dynamics, the patterns are more like dances than simple arrow trajectories.

To close this section: I've been playing with Cynefin in my mind for nearly ten years now, and I do believe that habitual use of it — making it a well-worn and loved tool frequently out of its storage place — is worth the trouble of enlarging it beyond its most simple forms.

What is sophistication in decision making?

One of the questions that has persisted through several years of research into decision support has been the "fifteen-minute limousine ride problem." This scenario is of the analyst with multiple decades of experience understanding infinitely complex problems (such as Middle East politics) who is asked to spend fifteen minutes talking to a national leader who is about to make a major decision that will guide the country's policy in that region for years to come. Granted, the situation is extreme and would probably never happen; but less extreme events do happen. How can the analyst in this fictional situation help the leader come to a good decision when the two people have such radically different habits and backgrounds when it comes to understanding and making sense of the world?

Forests and trees

People often separate people into "decision makers" and "analysts," though those names are exaggerations — certainly analysts make decisions and decision makers analyze. But in general the distinction between continuous, fine-grained detail and discrete, coarse-grained "big-picture thinking" is real and obvious to anyone who knows more than three people. Most people tend to one side or the other of the continuum based on personality and background. Explanations abound on each side of why the other is insufficient — "analysis paralysis" and the need to "trust

your gut" are mentioned on the fine-grained side, and "black and white thinking," "blindness" and "lack of nuance" on the coarse-grained side. Both sides speak of "sophistication" favoring their way of thinking — whether "gut" decisions are made (maybe "earned") based on many years of experience, or whether details and nuances are carefully examined. My feeling is that true sophistication is the ability to think clearly and effectively in both ways: to be able to see both the breadth and depth of the situation at once. That degree of sophistication is something I think few of us ever achieve.

One fact that many proponents of more nuanced thinking fail to realize is that decision making is a discrete activity by definition. Even when one understands the nuances of the many political interactions on a topic, it may be impossible to make fine-grained decisions about it: a bill passes or doesn't, a person goes to prison or doesn't, documents are made public or are not, and so on. Even when decisions *are* made in a fine-grained manner — say aid to a region is increased by two percent — they are often *interpreted* as discrete: the aid is higher or lower than last year's, or the aid is higher or lower than that to another region, or the aid is higher or lower than that requested, and so on. Perhaps big-picture thinkers are drawn to careers in which decision making is discrete because the necessary context better fits their natural tendencies (rather than the other way around).

Patterns and evaluations

Naturalistic decision making theory (see e.g., Klein 1998) says that people keep sets of patterns in their memories and match current situations with stored patterns (and if no stored patterns fit, they simulate new patterns to find a good match). My favorite quote out of Klein's work is this one:

> Before we did this study, we believed that novices impulsively jumped at the first option they could think of, whereas experts carefully deliberated about the merits of different courses of action. Now it seemed that it was the experts who could generate a single course of action, while novices needed to compare different approaches.

Klein contrasts his theory with rationalist, or normative decision theory, which says that people methodically evaluate the “expected utility” of all options and the “prospect” of all possibilities, and follow step-wise processes to arrive at idealized decisions. From the rationalist standpoint novices are fallible precisely because they cannot perform in sufficient fidelity to the rational model. In particular, biases of perception, information processing, and memory cause describable departures from perfect rationality (for a review see Plous 1993). Dozens of these biases have been demonstrated, usually in decontextualized experiments in which people are asked questions to which the “rational” answer is known, questions like “If you were faced with the following choice, which alternative would you choose? A 100% chance of losing $50, or a 25% chance of losing $200 and a 75% chance of losing nothing?” These questions have been asked of many people, but nearly always in laboratory or classroom settings, where one could argue that the actual decision is not “Which option shall I choose?” but “What will please my teacher?” or "What will get me out of this obligation soonest?" or "What makes me appear the most intelligent?" or any number of unknown questions.

Even though I feel that Klein's work makes much more intuitive sense and is more clearly grounded in real-world (not artificial) decision making than the rationalist school, I don't feel that either of these schools is wrong: only wrong out of context. Like simple physics, the rational explanation becomes more reasonable the further to the right of Cynefin space you get. And like

the physics of turbulence, the naturalistic explanation becomes more reasonable the closer you get to the left-hand side of Cynefin.

Patterns and trees?

Now, taking these two contrasts — big-picture versus detail, and pattern matching versus option evaluation — and juxtaposing them, they appear at first glance to be related. People often match up big-picture thinking with "jumping at the first option" and detailed thinking with deliberating the merits of options. In fact, some critics of Klein's work say that people who have to make quick decisions, like firefighters entering burning buildings, may match patterns, but analysts poring over huge databases methodically evaluate options (or should). As a person with many years of experience poring over huge databases, my intuition and experience tell me that these two contrasts are orthogonal. Patterns can be fine or coarse grained, and "gut feelings" can occur just as easily in days of conversation with a huge mass of statistical data as they can in a few seconds after arriving at a house fire. My feeling is that novice big-picture thinkers do more methodical evaluations of big-picture options, and experienced detail thinkers do more pattern matching at a detailed level. (Of course I think all of this is relative and probabilistic — it's not that experts *never* compare options, it's just much less frequent.)

The extensions to the Cynefin framework I have described here are all in the direction of making it finer grained, but any of them could be used in both pattern-matching and option-evaluating ways. For example, you could build Cynefin clouds by telling stories and placing them in the space, or you could methodically work your way through each of (say) 100 cells of the space and think of the qualities of that space. Or you could do both without excluding either technique. In fact, as I was thinking about the situations I pondered earlier in the paper (about my local bridge) I found myself tacking back and forth between remembering incidents, people and locations to trigger story placement (that's pattern matching) and visualizing different areas of the Cynefin space, considering their properties, and comparing them to other areas (that's more of a methodical option comparison).

Complementarity

I present these extensions to domain Cynefin as broadenings and complements, not as replacements or improvements. If you want to practice the *most* sophisticated means of using the Cynefin framework to support your decision making process, work on becoming facile with all possible forms and able to use any of them (or any combination of them) when the situation demands it. In fact, you can use Cynefin recursively: use it to plan your use of it. When the situation of your evaluation of your decision situation is primarily in known space, simple domain placement may be best. This is where the domain model adds nuance to simplicity, even while it is itself simple. In knowable space moving into the detailed consideration of all available information is useful. For example, one might build detailed animations showing the dynamic movements of cloud-shaped identities. In complex space Cynefin is most useful as a *catalyst* for coalescent thought, especially in group sensemaking. In chaotic space Cynefin may be most useful as a tool for action: for moving people out of "safe" areas of discussion, for coming up with radical "out of the box" ideas, for breaking up limiting assumptions, and so on. On the borders between domains some combinations of activities may be best, perhaps in iterative movements that create energy and churn. And of course extensions to Cynefin can work on your use of Cynefin as well. In some situations, considering domains and clouds in parallel may be

more fruitful than pursuing only one approach.

Conclusion

In this paper I have described the use of four combinatory extensions to domain-based Cynefin that provide more detail when detail is needed. I hope they will provide a richer tool set to people who are familiar with only the most basic form of the framework. The most sophisticated use of the framework is to become comfortable with fluidly moving among *all* of its forms as the context and purpose of decision making requires it. When I called this paper "The Wisdom of Clouds" I did not mean that using the variation of the framework I call "Cynefin with clouds" is more wise. I meant that when your overall use of Cynefin — or any other thinking aid — is cloudlike, meaning having meaningful internal structure and variation (suitable to context and purpose), your thinking is the most wise. My hope in writing this paper was to bring more requisite diversity to the use of the Cynefin framework in wide practice so that benefits will accrue to all those who use it.

Acknowledgements

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