

# THE PRAXIS EQUATION: DESIGN PRINCIPLES FOR INTELLIGENT ORGANISATION

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## THE LIMITS OF MANAGEMENT LANGUAGE

What is new in **the** world is a matter of emergence and increasing complexity. What is new in our world is a matter of language. We generate the world we live in as we create new distinctions and new ways of speaking. The world is constantly expanding both through its increasing complexity and through **our discoveries** of that complexity.

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Discoveries always have an element of invention in them. A discovery is made and with this comes the invention of ways of distinguishing and speaking about it. Murray Gell-Mann's brilliant contribution to the world of physics has been interpreted in different ways. Some say he **discovered** the quark, others say he **invented** it. What he actually did was invent a way of understanding and speaking about the world that was different than our previous way of understanding it or speaking about it. This allowed existing phenomena to be explained more effectively.

In a similar way, the early creators of the franchise way of doing business invented a way of understanding the combination of individual enterprise, marketplace opportunities and approaches to developing effective marketing and production methods in others. MacDonald's invented a way of understanding food delivery that they have continually refined over time. Disney invented a way of understanding delivery of a total experience of entertainment that has not been matched although many have profited by various copies and interpretations. Starbucks invented a way of understanding the coffee business and what people want. Koch Industries invented a way of understanding how to approach business so that entrepreneurial spirit is released - and created the most profitable privately owned company in America.

The world as we know it and share it with others is constructed collectively. That is, we are socialised into a world of language which enables us to understand things and speak about them. Language allows us to turn the chaos of initial sensory bombardment into a coherent universe. We use language to make patterns of things and relate actions to the patterns that we make.

## LANGUAGE'S ROLE IN THINKING

Most of us in the West approach things scientifically. Our prerequisite for accepting any new idea is that it must be backed by scientific proof and logic. In every corner of our society, we are learning and living in ways that are **dramatically** out of date. Today's scientists are dancing in quantum worlds and beyond, while the rest of us are chained to ancient reductionist science. The philosophers of the day are delighting in interpretive understandings of the world while the rest of us linger within the boring confines of a linear, cause-effect, subject-object understanding of the world.

Language creates distinctions -- linguistic patterns -- from the unfathomable complexity of the whole. It selects aspects of that complexity and combines them in ways that are useful. Language allows us to remember, to process, and to share what we have understood about the world and most importantly, to create new understandings. It does not just name what is out there. Language creates the experiences that we identify and speak about in a way which implies that the universe is "out there". We see things because (and as) they have labels that fit our existing set of labels.

Language emerges from the interplay of our capacity with language, the world, and the breadth of our experience. The fundamental language capacity of an individual human being emerges from the social

(commonly used) language and the everyday experiences of a person are social and thus contained in existing language.

Throughout history every society has had its own unique prevailing metaphors, belief systems, and understanding of the world. And in each society what prevails is not open to question. Occasionally, a society will go through a dramatic change very rapidly -- usually referred to as a revolution -- but as it turns out, even then, the change in fundamentals is only slight. Even in creating America, as unique as it is, there was not an alteration made in the fundamental beliefs of the nature of the world but only of the beliefs about the relationship between people and state.

Our patterns of understanding and meaning are embedded in language. If someone thinks or speaks outside of those patterns they are ignored -- or worse. The shadow this casts on the possibility of change is obvious. Our language is a composite complex adaptive system which emerges and evolves into the on-going source of our understanding of the world. What cannot be expressed does not become part of the world.

### **DISCOVERY THROUGH INVENTING WAYS OF SPEAKING**

I have been briefly involved in many major meetings and conferences and board level conversations where there has been a strong and authentic desire to change. Some of these have been with the world's largest corporations who have been many months into major change initiatives. Very little of consequence has happened at these events and each has included reports on the lack of results, lack of action and lack of commitment from past meetings. One predominant occurrence at these meetings has been the ordinariness of the language. The group who is meeting uses language that would have been completely familiar to earlier generations of executives in those corporations. Most of the language in one company would be completely familiar, comfortable and acceptable to the other companies. Few exhibit any change in language and, therefore not surprisingly, little change in thinking. While some may eventually win their struggle, many will be unable to question the very language and thinking that is the source of their being stuck.

New things are being discovered all the time. Using our long-held way of speaking, we would say that what was discovered was already there and that we had not yet seen it. When we approach the process of discovery using complexity, we would say that what was discovered did not in fact exist until we invented a way of speaking about it. To say that we've invented a way of speaking about something means that we've found a way to integrate what is being discovered with a linguistic representation of it. This can all happen within an individual in a way that cannot be shared with others but rather, retained by that individual and worked with privately. The discovery occurs for others only when it can be spoken about in the language of the day.

Out of a unique structure of interpretation, created by Frederick Taylor, about people and their relationship to production, arose Ford Motor Company. Taylor distinguished physical attributes of people according to their different sizes and weights and then designed equipment and processes to optimise productivity. By organising work flows in relationship to the physical possibilities of different human beings he increased the complexity of production. Breakthroughs in productivity were created when Taylor distinguished in new ways what was already there .

As computers increase in power, the software takes advantage of this and becomes increasingly more complex. For example, software that assists in project management has become increasingly more complex to make it simpler for the user, while at the same time, it allows the user to accomplish more. As more is accomplished, the software begins to increase even more in complexity and the cycle continues.

Dovre International, a Norwegian company, created a breakthrough in project planning and management software by recombining the algorithms that were dropped (in the past when computing power increased) with the new levels of computing power currently available. This new level of complexity allows all users the simplification of being more direct in their project planning and management rather than routing everything through another planning department. This is similar to companies discovering new, profitable mines by finding through research those mines that closed in earlier times for reasons of uneconomic production.

## LANGUAGE OF COMPLEXITY

Scientists working in the area of complexity have developed a "language of complexity" which they use to discuss ideas, expand theories, and carry out research. Management also has its own language, ways of speaking, and ways of making sense of the world. There is a tremendous gap between the new "language of complexity" and the accepted language of business. Bridging this gap in language is what will allow us to bring new ideas such as complex adaptive systems and organizational intelligence into our corporations for consideration.

Today's greatest challenge for those in leadership roles in our companies is to provide a **language of meaning** for our organizations. This does not imply that we invent meaning but rather, that we provide language and processes of dialogue by which existing meaning can be discovered and new meaning can be generated on a continual basis. In order to provide that, we must first understand the social construction of reality through language and next recognise that both individually and organizationally we are unaware of the language with which we constitute ourselves. Because we are unaware of it, we are unable to influence it and in turn unable to significantly influence our future.

It is critical that we develop certain linguistic capacities if we intend to dramatically influence the future of our organizations. One capacity we must develop is the ability to question our existing language as a way of discovering the limits created by our language. Another is the ability to generate a language that creates the emergence of innovation, learning, and creativity. And we must develop the ability to engage in dialogue that generates ideas or distinctions that did not exist before the dialogue. Developing our mutual ability to question the unquestionable and think the unthinkable, provides us with the capacities necessary to generate a future that is closely aligned with our intentions.

Everyone has the ability to question. The challenge is being able to ask good questions. Questions that demand answers are not good questions. Questions that demand thinking, raise more questions, or challenge the previously unchallenged are the questions that make a difference.

What confronts us first as we endeavor to develop our capacity to ask generative questions is that the already in-use language is designed to immerse us in a socially constructed reality that itself is not open to question. We are socialised into a language that excludes much from our thinking by implicitly -- outside of our awareness -- telling us what is so **and must** be so. The generative questions, that we are

attempting to learn to formulate, are ones that reveal what we have been unaware of, what has been unquestionable, or what has been taken for granted. These kinds of questions are greatly rewarded with new distinctions and the ability to create and integrate.

Linus Pauling (awarded two Nobel prizes) "The secret to successful research is simply asking the right questions."

## THE ROLE OF QUESTIONS

The least impactful questions to ask are reasonable or obvious questions. They demand little in knowing how to answer them. Although we may not arrive at the answer immediately, how to answer these questions is obvious. "Why didn't the engine start?" "What is wrong with the accounting department?" "Who's fault is it that things went wrong?" "What shall we do about George?"

Generative questions are those that demand we go beyond accepted ways of thinking as we consider them. They require us to move toward the answers in ways that are not obvious. Notice how the following questions differ from the ones in the previous paragraph. "What don't we know, that if we knew, might open new possibilities?" "What do we all accept to be true that is merely an agreement?" "What might be limiting us in an area where we don't even know we're limited?" "What is hidden from us by our way of speaking about things?" "What do we not think to question because it's so taken for granted that we don't even mention it anymore?" "What new approach to innovation, strategy, marketing, and quality might we take that would give us a competitive edge in the marketplace?" "What is the structure of our industry that, if we altered, would attract a larger portion of the market to us?"

Aside from often being socially unacceptable, questions that have the power to generate ask us to challenge what has proven successful in the past. Because things have worked so well in the past, they are passed on unquestioned and become automatic. The language of business and organization has changed little throughout the century and, for most of that time business continued to flourish using that language. However, frustration is on the rise everywhere as well-seasoned managers find themselves incapable of impacting their organizations. They are finding themselves ineffectual in everything ranging from fully utilising the benefits of new technologies to continuing to win business and make profits. New managers setting foot for the first time onto the well-cultivated soil of management in large, established companies are learning the language by rote and at the same time grappling with their sense of personal ineffectiveness. What's interesting is that it's not dawning on anyone to question the language itself.

The signal that thinking and its related language is used up and no longer has the power to inform or direct effective action is that we expend more and more energy and get less and less in return. Working harder as a method of producing increasing results is a road to suffering and ultimate loss. Everyone knows the "working smarter" is the answer but few realise that involves changes in thinking and language and effort expended in cognitive engagement rather than mere energetic output.

## QUESTIONS IN THE LANGUAGE OF COMPLEXITY

The nature of a language is that it conserves the community that uses it. What is considered acceptable in that language -- what can be said and what will be heard -- is a function of what will maintain the community. Language or questions that challenge the foundations of the community are not acceptable.

The conservative nature of language is "enforced" by the rejection of those who ask questions that are ¶not allowed¶ or speak in ways that don't match the culture. How we determine whether or not we are a part of a community is by whether or not we speak and understand its language. The conservative nature of language makes it difficult to question the basic assumptions held by management, organizations, and even entire industries.

The language of complexity offers new levels of understanding and new distinctions with which executives and managers can meet and work with their challenges. The language itself challenges the sufficiency of our long-held ways of speaking and thinking. It provides questions that challenge established thinking and provides a means for exploring those questions that is appropriate to the new distinctions of that language rather than confined to the prevailing social agreements of our organizations.

One question that begins to open doors is, What is crying out for change in our industry or organization? It's a tough question to answer in a meaningful way. This type of question demands rigorous inquiry. Being a frequent traveler, it is obvious to me what it crying out for change in the airline industry. Customer surveys, letters of complaint, and widely publicised jokes about lost baggage and terrible food are making no difference to the provision of airline services. I have yet to meet a frequent business traveler who has chosen accolades as a way of speaking about their door-to-door travel.

As an exercise in revealing the interpretations that has the airlines organise in the way that they do, ask yourself, "How do you suppose the airlines see and interpret their customers, employees, various services, or their competition?" Also include in the exercise check-in lines, booking, baggage handling, airport layouts, customs and immigration, physical comfort and the myriad of other components that comprise the experience of a business trip. Next, invent interpretations that would encourage different approaches.

If you have undertaken this exercise seriously you will probably have come up with some very accurate conclusions about the airlines' interpretations and gone on to generate some very workable alternatives. So why can't the airline industry see what needs to be changed and re-invent itself? What keeps everyone in the industry locked in?

Now consider that what is so for the airlines might be so for your own business.

### WHAT IS CRYING OUT FOR CHANGE?

Some of what is crying out for change within an organization is fairly obvious from the perspective of an individual employee. The same is true within an industry -- what is crying out for change may be obvious from the perspective of one of its participating companies. But it's the nature of inherited structures that they have within them elements that typically remain concealed. So from our own perspective, we see little about ourselves that is crying out for change because every entity has a relatively coherent identity or self image that has already been largely integrated with an existing environment and a world of experience.

Our quest to understand innovation, adaptability, and leadership initiates the question, "What is crying out for change?" This question naturally unfolds into questions about the prevailing conditions and processes. Prevailing conditions and processes conceal possibilities **because** they prevail. What prevails

is taken for granted by everyone and conceals what is possible. Its ability to prevail is based in being taken for granted.

Our understanding of complex adaptive systems is very useful in trying to grasp how our organizations adapt. If you want a transformation to occur in your company, begin with questions that pertain to your industry rather than to your individual part of it. Why? Because your company is a complex adaptive system that has been adapting to the other systems that form your industry. Your industry is the immediate commercial structure to which your company has adapted. Any company adapts more to its suppliers and competitors than it does to its customers -- usually by necessity.

Despite popular rhetoric about the customer coming first, we are bound more by our industry structure than by our customers. This is because the industry, marketplace, and product development, etc. have emerged out of the continual interplay of countless elements and created an integrated adaptive system in its own right. Any customer will come in contact with numerous buying options before making a selection and their selection will be based on the choices offered by the marketplace.

As customers we typically don't stop to imagine what other type of option might actually serve us better. We may come up with ideas for small improvements but we'll buy what appeals to us most from the choices available. As producers we are in pretty much the same situation. We would have to expend far more creative thinking and development costs than most of us have considered in order to go outside the existing support structure of suppliers and general market acceptance. This applies not only to products but also to forms of delivery and to the different ways we organise for production.

## INNOVATIVE QUESTIONING

Abel Aganbegyan, a leading Russian economist during the time of Gorbachev, shared with me that the source of his success in transforming an area of Russia into a relatively free economic zone was innovative dealings with suppliers. In order to create something that slightly resembled what we would call a productive enterprise, the problems that needed to be overcome did not have to do with customers. The customers were delighted with even the slightest improvements that occurred. The problems that continued to persist were related to quality, delivery time, and the acquisition of machinery that would produce something reliably.

John Neil, CEO of Unipart states, We've achieved 90% of what we started within our own company. The challenge now is to get our suppliers to participate in the same way so that we can achieve a 90% improvement in that domain. Unipart challenged themselves with the question, 'What is crying out for change'? The prevailing conditions of the industry, when questioned, produced vital answers with which to work. Significant innovations occurred across the board. Unipart's achievements required overcoming the conservative nature of language systems.

The ability to ask questions produces remarkable results as we endeavor to reformulate our way of doing business. Mastery of language and dialogue enhances that ability. Our linguistic capacity carries with it the potential for transforming us from mere complex adaptive systems into intelligent individuals, teams, and organizations and allows us to challenge the patterns that prevail and our current relationship to them. We become able to design ourselves. When new patterns are identified and new distinctions are created in language, they are the source of the emergence of new structures, new forms, new practices, and new results.

A simple and successful approach to the kind of innovation that will shift things in an organization in any substantial way is to combine the intention to innovate with questioning. Question everything that is said in day-to-day affairs about the company's particular historical emergence and the entire industry. The source of effective questions will be in knowing what to question and this is where **listening cues** are critical.

The listening cues which I have enumerated below all occur within the context of a larger question and this senior question must always be present for them to be effective. The question is: "In what ways can we reveal the common principles that shape our industry, our company, and our systems?" Without maintaining a strong interest in the senior question, our listening and questioning will probably remain at a very shallow level and in turn be abandoned after the easy and immediately profitable responses have been revealed. This senior question is meant to provoke increasingly more comprehensive levels of understanding which lead to an ever-expanding process of transformation of what is possible for an individual enterprise.

**Listening cues** are designed to elicit information that can be used to foster the emergence of new levels of understanding. They are not formulaic, nor will they provide automatic answers of what should be done. **Listening cues**, and the inquiries they initiate, are designed to encourage the emergence of new distinctions and from those new distinctions innovation emerges. These cues can be used as listening tools in any conversation to reveal whether the direction of the dialogue is being determined by prevailing conditions or by the intention to question, reveal, and transform the prevailing conditions .

#### **WHEN LISTENING TO A CONVERSATION NOTICE IF IT HAS A SENSE OF OR INCLUDES;**

**Permanence rather than process.** These conversations will include such terms as "this is the way it is" or language that turns ever-changing or emergent phenomena such as "relationship" or "team" into a fixed unchanging thing.

**A fixed reality.** Listen for proclamations of "the real world" or some absolute truth. These conversations include phrases portraying an objective reality which the speaker claims to know.

**Unquestioned agreement.** Cues to notice are such terms as "everybody knows". Also included are statements of ridicule based on social authority or non-verbal signals not to challenge.

**Knowledge claims without testable formulations.** These statements are usually delivered in a manner which trusts that authority or power will suppress any challenge.

**Justifications based on historical grounds.** These conversations kill innovative thinking and the possibility that things have changed, are changing, or might change.

**Unintelligible language of explanation.** This includes buzz words and things which cannot be expressed or demonstrated in language appropriate to the situation.

**Buzz words and jargon.** These statements lack adequate explanation and/or produce no results when used. This includes excessive use of management terms such as "vision", "purpose", and "commitment" as well as older phrases such as "the bottom line".

**Unchallengeable statements.** It is intended that these statements be considered valid because of authority of position, expertise, or force of argument.

**Simplistic causality.** This kind of language is based on the assumption that there is a single cause or identifiable hierarchical set of causes for an event. This particularly includes taking complex or emergent phenomena and reducing them to specific elements.

**Engineered approaches applied in work with emergent phenomena.** This includes any kind of planning or strategy based on the assumption that predictability is possible from analysis or an accurate representation of something.

[Designing for Emergence: Books: The Praxis Equation: Chapter 2](#)

## TECHNOLOGY AND THE STRUCTURE OF THE FUTURE

New technologies in the workplace are changing our organizational possibilities far beyond what we have so far been able to grasp. Combinations of groupware, hypertext, Internet and network processing have transformed what is possible for human beings working together. We are on the verge of making a quantum leap in organizational intelligence and that leap will, in turn, create a quantum leap in the intelligence capacity of individuals. Even though technology is the vehicle through which a major change is occurring, we miss something by focusing on that. Technology has made something possible that is an expression of a kind of thinking that is at the heart of the technology. It is a way of thinking that is an essential element in the unfolding of the path of realising the possibility for organizations and individuals to become fully human.

Let's glance back into our history to another point at which a technology dramatically altered the structure of the future. For centuries the authority of the church was inviolate. The extensive power of the church could have been attributed to its control of the interpretation of religion. How was that grip on a specific interpretation maintained? The bible, the sole non-personal source of authority, could only be copied by hand which made it far too expensive to be possessed by anyone other than the church. In addition, few people were able to read so interpreting the bible for themselves would have been impossible even if they could obtain one.

The invention of the printing press and moveable type marked the beginning of the transformation of the power of the church by loosening its grip on the structure of interpretation. When these technologies came into existence, they altered the structure of the future of the church forever. Their occurrence made it inevitable for people to learn to read and own bibles. Individuals could now refer to the source themselves and create their own interpretations which in turn undermined the authority of the church. No longer could any single interpretation dominate. The creation of splinter groups and new formations became inevitable. There was a dramatic increase in questioning, dialogue, and individual reflection causing the structure of authority in the church and all of its adjoining institutions to crumble.

### Our challenges

We are currently in the midst of another shift equal in magnitude to the one created by the printing press. Today's new technology not only makes individual interpretation possible but it calls for -- even demands -- such interpretation. Technology lends itself to interaction in such a way that individual

communities can -- and will be called to -- develop their own interpretations and share them with others. Everything spawned by the printing press had a common referent which required that we start with the authorised and interpret from there. Today's technology, however, supports the creation of multiple interpretations and the sharing of those interpretations publicly. We are invited to create social expressions that need not pay homage to formal structure, authority, or even authors. The very nature of the technology itself invites us.

The linearity of text is vanishing. And with it the authority of authorship. When someone authors an idea, what shape it will take at any point is beyond their jurisdiction. Control of meaning is rapidly disappearing and dialogue is being freed from constraints of time, place, and authority.

What is being presented to us is the possibility of becoming active creators of our own social realities. The awesome responsibility that goes with this is unavoidable because the structure of the future has been altered. The future that will now emerge will bring with it a pressing need for the managers and executives of tomorrow to understand and be proficient with language, dialogue, meaning, and interpretation. In the past, the unassailable structures of authority have screened us from some of the more authentic attributes of leadership and responsibility within our organizations.

To date nearly every attempt at corporate change has been led by those holding the reins of authority and their change efforts naturally include preservation of the fundamentals of the structure that maintains their authority. This way of doing things, which we inherit for our life as a human being, gives us very little freedom. Even though the technologies of groupware, hypertext, Internet and networked communication are introducing new possibilities for how we organise, if we are to participate effectively in any corporate change process we must have an understanding of language, meaning, and communication that is consistent with a world of complexity and intelligent entities.

We are being called to develop our capacities of interpretation and dialogue as never before. What is proving to be authentic leadership in today's world is the ability to provide structures of interpretation, meaning, and relationship which call forth those capacities in each and every person. What we are able to accomplish together without force is becoming of paramount importance.

## **PRINCIPLES OF DESIGN**

### **The principle of socially constructed reality**

As beings who are socialised into a language based culture, we inherit a world which is constructed in the language that we learn. That language is our reality yet it is socially constructed in that it exists in language and is not the thing itself. The lesser socially constructed realities - family, community, country - are also socially constructed. Successful corporations have constructed a unique social reality that is distinct from the ordinary reality of the people and places of its operating environment.

### **The principle of questioning the unquestionable**

How is it possible for us to inquire into the common principles that shape our industry, our company and our systems? This question leads to the possibility of transformation of organization. There are unquestionable elements in every communities patterns of action and language. These are identifiable by verbal and non-verbal cues. These cues are the signal to question if a corporation is to become extraordinary.

### **The principle of structures of interpretation**

The job of the leadership of an organization is to provide a structure of interpretation which is useful to the whole organization in understanding and making meaning of what occurs. We inherit our structures of interpretation - the methods and models that we use to understand - and these are designed to produce ordinary interpretations acceptable to the larger community but insufficient for breakthroughs or remarkable performance.

### **The principle of distinguishing**

Distinctions are new patterns identified or created in language. It is the creative act of distinguishing in more detail or more generality - or in new combinations - that makes some more successful than others. Masters of a craft or profession have more distinctions in their area than lesser performers. To succeed in a field where others are operating means to generate more complex distinctions than the existing members of that field.

### **The principle of dialogue**

The source of the new is recombination of ideas. This recombination occurs mainly in dialogue where there is an intention to create something new. Dialogue is the active process of emergence where information and knowledge that is tacit becomes available for recombination. It is the process of dialogue itself that elicits the tacit knowledge that exists in the individuals and in the larger community.

### **The principle of challenging winning formulae**

We have all developed practices, habits and automatic behavior that allows us to succeed. These get translated into winning formulae as they continue to work. As winning formulae, they also become part of our identity. They are "what we know works" and therefore cease to question or even allow to be challenged. It is these historical patterns of successful response and behavior that blind us to the possibilities of change. A practice of challenging what is successful is required.

### **The principle of walking in the other's moccasins**

We experience the world from our own perspective. This principle is designed to continually awaken us to that fact. It cannot be otherwise that we experience the world as we do. But we can continue to remind ourselves and to establish practices that demand that we consider what the world is like from the point of view of others. This is the principle to bring into operation whenever there is disagreement. That is, the source of the disagreement is the experience from the others' point of view.

### **The principle of listening**

As we live in a reality that is constructed in language, we can know all that is needed by listening. In the speaking of others - and in their silence - we can hear the whole being expressed. Language is an emergent and complex phenomenon and therefore the whole meaning, the whole communication, is indicated in every part of it. We miss most of what is being communicated if we attempt to listen only to the explicit information or message.

Almost every business seems to view their work as getting a share of what already exists, and only very rarely do we happen upon a company which sees its responsibility as creating a future. During this era of rapid change, the exploration of what is possible should not be considered a luxury reserved for a few, but instead, a necessity for all. Most of us don't understand the nature of exploring possibility. Nor, do we understand the levels of risk for particular actions, or the cost of our inaction. Most of us are only comfortable dealing with options for our future that can be seen clearly from our current position. And far too few of us are proficient, or at ease, with essential expeditions into the unknown.

If we are not equipped with the appropriate skills for exploration and we flounder in our efforts at exploring possibility. We are able to see the direct costs of our failures. The long lags and tenuous

connection between actions and uncertain results obscure the cost of missed opportunity. We have no way of interpreting the efforts of those who are beginning their explorations -- so we misinterpret them. We grapple with the process of interpreting risks because we are viewing them through a lens which does not include possibility, but only a future which is an extension of our past.

We must develop the courage and the skill to become explorers. And our greatest challenge, as we live the bold and innovative life of an explorer, will be to simultaneously hone the craftsmanship and discipline that are part of a life of production. As rigorous as it may sound, it is possible if we transform production and everyday affairs into acts of exploration.

TO [OUTLINE](#)

## ADAPTATION

We have all explored a landscape. Some of our most memorable vacations are those in which we have perseveringly scouted vast areas of unfamiliarity. From the moment we first walk through the doors at our new place of employment, we begin our exploration of both the physical and cultural territory. The youth of our culture grow and learn about the many facets of life by exploring everything from shopping malls, to just how long they can postpone something before they provoke their parents. Members of the animal kingdom continually explore terrain for possibilities of food, shelter, and threats to their survival. The life of the young of any species can be seen as an exploration of available landscapes.

Exploring a landscape plays a critical role in an entity's ability to adapt and innovate. Where adaptation is possible, or where there are many variations of possible environments, the ability to search a landscape is essential for long-term success. Our proficiency at searching a landscape becomes even more important when there is an acceleration in the speed at which a landscape changes and adapts. When a landscape is changing, no single adaptation will provide long-term survival value. Inevitably the conditions which suit an entity will change. When that occurs, what was once beneficial becomes a handicap. The ingredients for a sustainable future can be found in the ability to adapt -- not in any particular adaptation.

Our proficiency at adapting co-evolves with our proficiency at moving around in an environment. **Adaptation possibility** increases proportionately to the increase in our range and speed of mobility. In a constantly changing or rugged environment, proficiency at learning, adapting, and innovating are essential. As the rate of environmental change increases and the range of mobility increases, the demand for a capacity of adaptation increases exponentially. The explosion of new technology, global competition, and alternative organizational forms is putting enormous pressure on those in our corporations to understand the principles of exploring landscapes, so that we can enhance our adaptability.

TO [OUTLINE](#)

## FITNESS LANDSCAPES

Let's borrow the topological analogy of **fitness landscapes** from Stuart Kauffman, a MacArthur Fellow and one of the brilliant minds at play at the Santa Fe Institute. To suit our purposes, let's apply his analogy of landscapes to spaces of possibility to be explored. The optimum position on any landscape

would be defined as the highest "peak" and the least attractive position would be considered the lowest "valley". What distinguishes a peak as an optimum point in the landscape is that a minimum amount of resources is required to obtain a maximum amount of sustenance (profit). The summit of a peak is reached when nothing can be improved in terms of our survival. Life is easiest and most rewarding at a peak.

Let's approach the analogy of **fitness landscapes** from two different perspectives, then combine these two perspectives, and see what the combination has to offer in terms of strategy for an enterprise. Our first application of the analogy will be to assess fitness for survival and sustenance. The next application will be to assess strategy and future. The combination of these two perspectives mirrors the corporate requirements for current production and development of future possibility.

The nature of peaks, in any competitive environment, is that they are in a state of constant flux; the same applies to **fitness landscapes**. Peaks in both situations vary over time as well as, space. As a landscape changes, any particular locale will either increase or decrease in its fitness for an entity's survival. The counter of this is also true; the fitness of any entity, for survival at any particular locale on a landscape, also changes. **Peaks** of fitness are optimal and **valleys** of fitness are the least advantageous. At a peak, the greatest returns result from minimal output of energy. In a valley, very hard work produces a meager existence and survival is constantly in question.

There are a variety of landscapes we may encounter. One contour is of a single peak with relatively steep sides. On this Fujiyama-like landscape, every step will move us toward or away from the peak, and what direction we are taking with each step will be immediately obvious to us. Most corporations view their surrounding landscape in this way, and the way that most of them choose to express their strategic intent are an indication of this. "Being number one" points to the perception that there is a single peak, and that whoever is perched on top is king.

Another landscape contour is of two or a few peaks of relatively equal height. This way of interpreting our environment offers essentially the same challenges as a single-peak landscape because what sets precedent is reaching a peak, and each step is measured in terms of climbing toward a more optimum point. If a corporation is perceiving the landscape in this way, the participants of that corporation will have a shared intention of focusing solely on winning the game that is already underway. The feature of predictability and ability to know what is wanted is similar in this view of the competitive landscape to the previous one.

Landscapes can also be flat. In this type of terrain, it doesn't matter whether or not you explore because any point on the landscape is equally suitable for survival, and no advantage can be gained by adaptation. Because most bureaucratic businesses operate in this way, they manifest as tired and sleepy enterprises with little concern for intention, change, or challenge. Low investment of resources, time and attention into searching for new possibilities characterises these companies.

These three might be considered landscapes of predictability. That is, their shape and characteristics are largely known, or believed to be known, and one's position in the landscape can be seen relative to the whole.

The fourth, a rugged landscape or a **landscape of possibility**, which has the most to offer for developing corporate strategy. These landscapes have many peaks of varying heights, and of the many peaks, some

are more outstanding than others. Between each of the peaks are valleys. What's interesting about this landscape is that, even though it's obvious that we are either climbing or descending, we cannot tell whether we are climbing towards one of the optimum peaks on the landscape, or one of the lowest peaks. The efforts of our climb may be poorly rewarded because other peaks are higher, and we would have produced better results with our efforts had we chosen to climb another peak. In other words, we may win in the wrong marketplace and thus lose.

Again, Stu Kauffman has created a useful distinction for referring to the exploration of this fourth type of landscape -- he calls it an **adaptive walk**. Namely, as we explore the surrounding landscape, we assess our fitness level at each point and either adapt our capacities to increase fitness at that point, or move in a direction in which our existing capacities would be more effective. We improve our position on the landscape by either adapting internally (which improves local efficiency), or by changing our location on the landscape. A **landscape of possibility** includes all areas not yet explored, most of which cannot be seen from one's current position -- or from any other single position.

The nature of a rugged (rapidly changing) **fitness landscape** is that we cannot see beyond our immediate vicinity in order to predict the long-term effects of our actions. It can be likened to walking in a jungle. Even if we climb a tree and are able to see that the mountain we are seeking is in a certain direction, we still are not able to see the best pathway to get to the mountain from that vantage point. Or we may just happen to be in a position in which the next step, which is hidden from view, will plunge us into a deep pit. Our walk in a jungle may put us at a vantage point from which we may not see the impassable river ahead; one that will require we go in the opposite direction from our destination for some considerable length of time.

These same principles apply to the concept of a **fitness landscape**. Namely, from a specific vantage point, we can see the direction to a higher peak but we cannot see the pathway to it. Nor can we tell if it will prove to be a particularly high peak, when seen within the context of a larger landscape, until we actually get to the top of that peak. From our new vantage point, perched atop the peak, we may see that our current peak was obscuring numerous higher peaks that would have been more beneficial to pursue from the valley floor.

Once we've reached a fitness peak in a **landscape of possibility**, there are no immediate moves that can be made that improve our effectiveness. As we climb, the higher we get, the less likelihood there is of any benefit from any particular step. If we are only part way into a climb, any step will have the possibility of improving or eroding our fitness for survival. If we are still in a valley, any move will better our position, but as we move away from a valley floor and toward a peak, each step reduces the possibility for improvement in the following step, and increases the possibility for a reduction in effectiveness.

As Cray developed its ability to build supercomputers, it became locked into climbing that particular peak. The better it got, the more expensive it became to pursue any other path - such as developing minicomputers. As IBM developed leasing arrangements for selling computers, it became increasingly difficult to adapt to a marketplace with other financial options. Xerox is fabled for having invented many things which were exploited by others successfully. Those things did not advance Xerox on the particular peak that it had created and climbed. While many consider this a failing of Xerox, it may represent its strength when seen from the perspective of exploring rugged landscapes.

The challenge of our **adaptive walk** is intensified by the fact that most of the peaks we are able to see are merely local peaks and may in fact be low when seen within a larger landscape. Arriving at a local peak, even though it is low, may be sufficient for success, if entities of higher fitness from other peaks are excluded from our area. In many cases, however, higher peaks have attained their height on competitive landscapes by encouraging their occupants to explore lower territories on numerous other peaks. Within a longer time frame on competitive landscapes, those that have conquered higher peaks can invade the territory of those lower on the landscape -- but frequently this does not work the other way around.

As the number of peaks in a landscape increases, the distance between individual peaks lessens and the number of steps involved in reaching the top of a peak decreases. As we move closer to the top of each peak, there tends to be an increase in the number of peaks that are not optimal for us. Within real life situations, the most common condition that occurs is that there are substantially more low peaks than high ones. There is no way of knowing which peak is optimum because there is no way of searching the entire landscape. What proves to be an invaluable asset for exploring **landscapes of possibility** is a capacity for climbing, combined with a capacity for searching out peaks that are higher than the current one being climbed.

As we move uphill, the number of steps that look like they produce benefit declines and it becomes compelling to climb the particular hill that we are on and narrow the number of directions by which we approach that peak.

As a company begins to dominate a market, the number of options open to it lessens. Also new limitations are introduced as to what specific pathway can be taken to the top. A company's interest and ability to look for new peaks is discouraged as the apparent cost of exploration increases. The increase in exploration costs, created by expending energy on the lower part of a peak are, of course, deducted from our profits. This is another way of saying, we're not interested in investing in our future at the expense of our current advantages.

The theories of **fitness landscapes** are applicable to technology, production efficiency, marketing approaches, specific products, features of products, and knowledge bases. And for today's rapidly changing world, these theories offer countless insights for working with organizational designs. There are a variety of organizational forms, each having its own unique qualities of fitness. More frequently than not, today's corporate winners are possessors of unique structures of organization which have increased capacities for **adaptive walks**.

Entire ranges of peaks can be dominated simply by capturing a single peak. Even larger ranges can be dominated by conquering a number of related peaks. By increasing complexity by integrating a number of peaks, a company can greatly expand its ability to dominate ranges of peaks and its ability to create as well as explore new peaks.

By being fit enough to position itself atop a particular peak in operating systems, Microsoft dominated IBM, and now IBM must clone. Then by continuing to hold that position, Microsoft was able to dominate a number of smaller peaks in the arena of software applications. This is enabling access to peaks in banking, information use, and entertainment. By combining these as well, and thereby increasing its complexity - its various connections, couplings and relationships - Microsoft is able to provide a more robust ability to explore landscapes. Equally important, it increases its natural adaptation to changing

landscapes. By the time its domination of operating systems is over - that day will come - it may have both established itself on new peaks and created a first class ability to explore new **landscapes of possibility**.

TO [OUTLINE](#)

## VISION - IN A LAND OF POSSIBILITY

When the bountiful rewards of a peak are mixed with the kindling of a powerful new vision, it ignites the great dilemma that is facing many successful companies today. Surrounded by increasing returns for decreasing expenditure (the ideal commercial condition), which can be found at the summit of a peak, we are seldom motivated to seek new peaks by exploring possibility. Our human (and corporate) tendency is to exploit the peak that we have already captured. What is ironic is the fact that from atop our peak we have a better view of the landscape of possibility than others. We are able to see more clearly which peaks are actually higher than ours, and over a period of time, we are able to observe in what ways the whole landscape is fluctuating.

Keep in mind that our perspective is strongly influenced by the mere fact of knowing that to move away from our peak (the prerequisite of exploring new territory), we reduce our return on investment -- the higher the peak the greater the sacrifice. Also inherent in explorations beyond our own peak is the need to be less efficient at what we are currently doing.

Alas! We are faced with the inevitable dilemma -- better view yet more attachment to our current position. And striding right along side are two other situations which are equally conflicting -- more resources to finance exploration yet, greater relative cost for each step in our exploration. The potential for resolution of these conflicting constraints lies in our understanding of the nature of **landscapes of possibility**, and being able to make intelligent decisions about exploration strategies. All exploration strategies are not equally effective.

If you don't search a significant amount of the landscape, and are therefore unable to assess which peaks are optimal, what impact does that have on your strategy? One option available to us is to develop search strategies based on our understanding of landscapes. Another is to continually redefine the business so that, depending on the definition, local peaks are reduced to valleys which allows for exploration of other peaks. A third potential strategy is to organise as an explorer, rather than a single peak climber or defender of one's current position.

In the 60's, forming conglomerates was the rage. The idea was that good managers could manage anything. Good systems and large accumulations of capital could handle any problem. In some areas of the landscape, this was true for a time. Those areas were mainly established with little variation in the landscape. It turned out that the management capabilities of those pursuing conglomerates were generally not as great as hoped. Those few who succeed at this strategy to the present day actually do know something about management that the rest don't.

It may be that a time of successful conglomerates is returning. This time, it will not be focused so much on capital accumulation. Management will play a significant role but it will be based on new, biological models and not on the centralised models of earlier times. The key to success, however, will be on

seeing the possibilities of complexity. That is, it will depend on seeing the potential for increasing effectiveness in exploring more **landscape of possibility** and for creating peaks where they didn't previously exist through new combinations of existing peaks.

The moment we begin the journey of a new strategy, we are faced with the question of how to skillfully balance the amount of resources to be designated to the exploration of new peaks, and what amount will be employed to improvement on the peak we are already climbing. Obviously there is no single answer. How we distribute is contingent, in part, on our assessment of our location in relationship to the top of the current peak being climbed. Another determining factor is the amount of risk that a corporation wants to take. Percentages of distribution of resources will also depend on the level of development of our rivals or the industry as a whole, and how rapidly the landscape is changing. Each corporation will choose a different balance and that choice will become one of the elements of its competitive strategy

Out of our strategies emerge actions, and constant feedback will be received not only indicating the effectiveness of our actions but also, the current lay of the landscape and our corporation's position on it. The feedback from our searches will reveal such information as how much has already been achieved by others, the value of particular steps, and the distance of potentially higher peaks. Our searches will also reveal information about where the landscape is changing -- which peaks are becoming valleys and which are becoming more optimal. This would have been a valuable way of looking at your industry if you were in the recording business for the last couple of decades. The local peak for records plummeted and became a valley from which you either started climbing a new peak or died. Today the local peak for tapes is tumbling and the peak for CD's is rising rapidly. And there is more than one CD peak being formed.

Unilever is an example of how many of today's corporate giants have evolved in rugged landscapes. An earlier success in the formulation, manufacturing and marketing of soap can not explain the size of the company today. By using the resources generated from a single peak (soap) to explore other areas which would create a "mountain range" with many peaks, Unilever created a world wide giant which covers many ranges of products. Its current success is not so much its domination of any single peak but its ability to be high on a number of peaks. Unilever is able to generate profits from each of these positions and use those to explore other peaks and other ranges. For companies like this, peaks can be sought in product lines, in science, in management, in marketing - in any number of areas. It may be that the future success of Unilever and companies like it will be in their ability to discover or create and then to climb peaks in areas such as communication, information technology and organization.

A well-designed strategy will combine searching close to home in order to influence the direction of the current peak with, searching a sufficient distance in order to locate other peaks. This type of strategy will produce the information needed for immediately improving ones current environment as well as information for searching out new environments that are suitable for the corporation in its present state. Both types of searches prove beneficial for companies that are relatively high on a given peak. Searching one's immediate area results in actions that produce the sustenance (profit) needed to finance expeditions. Searching out new environments initiates the climbing of other peaks and thus begins the process of generating a future beyond the life of a single peak. As these two searches co-evolve, issues of identity and survival move to the forefront.

TO [OUTLINE](#)

## IDENTITY

A corporation may build the structure of its identity in relationship to an industry, a technology, an inherited way of doing things, a locale, or an organizational structure. Ideally, it will be some combination of these things. An identity that is created around any specific thing drastically reduces searching flexibility. When a rigid identity is in place, there is minimal adaptability and survival is immediately threatened by the slightest change in the landscape. A corporation with a rigid identity tends to manifest a siege mentality and squander resources on defending their peak, rather than exploring new terrain.

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This is the opposite of the expression of Andy Grove of Intel who uses metaphors of being under attack and paranoia. Intel has created a very high peak, climbed it and is defending it against all comers. This strategy has been hugely successful and, no matter what later outcomes occur, will go into the business history books as a remarkable success. There will come a time, however, when another peak will emerge and Intel will be likely to be so busy defending its own peak that it will not notice until too late that no one is attacking their particular peak any longer. This is not to suggest that there is anything wrong with the Intel approach nor that they should make a change. The kind of economic success they are achieving shows that there are many strategies and many potentially successful identities. While an approach based more on **adaptive walk** capacities may provide a longer life, it won't necessarily provide the most profitable one.

But every entity must have an identity. A corporation simply can't pursue every peak. Choices must be made, so what will be the foundation of our choices? And whatever we choose as a foundation, inherent in it must be a robust capacity for adaptation. Perhaps **values** have the most to offer for the emergence of our corporate character. **Values** are able to endure change. They embody elements which can be recombined to refresh our corporation, to enhance its ability to survive changing circumstances, and to even pursue or be the cause of change. The less detailed and more fundamental the values we choose to constitute our identity, the greater our flexibility. As we collectively explore possible values, we must remain awake enough not to become deluded by prejudices, dressed up as values, attempting to maintain old ways. Falling for such a misrepresentation might shield us from our need to adapt until it is too late.

Our ability to create an identity with a strong capacity for adaptation can be enhanced by perceiving our organization as a set of competences that can be recombined with other competences in order to create new ways of doing old things or create totally new things. Instead of viewing the business or main product lines as local peaks, consider each competency to be a local peak. Combining peaks in new ways may create a mountain range that is superior in survival ability than a single peak would be. An organization that is comprised of a range of local peaks may create a constantly fluctuating landscape, some peaks will be on the rise as others fall, while the overall range continues to increase in height and breadth.

The art of identifying current competences and generating new distinctions, so that new competences can be created from existing ones, is known as **chunking**. This process creates new competences by breaking down existing ones in order to combine them in new ways or, it may create them combining

the existing ones with newly created competences. **Chunking** is much more than the ability to describe or identify, rather it is an act of creating, made possible through our deep understanding of existing processes, combined with our capacity for creating distinctions of **granularity**. Our ability to create these kinds of distinctions comes out of being able to see things in extremely detailed and unusually abstract ways.

Companies are beginning to move beyond the trivial exploration of "best practices" into the more complex ground of generating breakthroughs through focus on specific areas that have been considered too small to be worthy of significant attention. Koch Industries, for example, with operations in many diverse businesses, has created communities of practice which are recognised as **landscapes of possibility** with peaks and valleys. These communities of practice are centered in such areas as valves, grinding, changing set-ups and other operational issues that cross boundaries of industry, geography and application. These communities of practice focus on the terrain of their own interest and generate new possibility in the field. These are tried out against goals of breakthrough and then shared throughout the larger community of Koch. The learning from application in different areas produces further refinements and the peaks get higher - the rewards get bigger.

Integrated circuits, the heart of the technology that is transforming our lives, were initially invented for use in computers. But the computer industry wasn't interested! We might have lost the invention for decades, had the inventors not gone on to explore other local peaks. The highest peaks at that time were basic machines, all which had the potential for being optimally enhanced by intelligence. The first applications of integrated circuits were in washing machines and elevators. Ten years passed before integrated circuits were seen as something that could be usefully combined with the already existing competences of computers.

Visa created a very unique -- and very high peak -- by moving to a higher level of abstraction than other credit card companies. They redefined the business of credit cards to be other than credit. They declared that their business was facilitating exchange wherever it takes place. They transformed themselves from a credit business, with lots of competitors, to an **exchange card** with none. They created distinctions of granularity and said that they were moving information -- not money. This positioned them on new peaks well ahead of their competition.

Christian Salvesson, a company of longevity and substantial profit, utilised their expertise, gained in shipping, for creating a new peak to climb. They again made their way to the summit of yet another peak, this time as a successful storage company. Stora, a Swedish paper conglomerate, has similarly created other peaks and has been able to maintain a level of success that has spanned centuries. They have done this by creating entire ranges of peaks.

If you create the peak, such as Intel or Disney has done, other companies or industries are compelled to climb the peak that you have created and, as they climb your peak, you can be both getting underway in the creation of the next peak and leading the extension of the peak you are on. This kind of strategy can be limitless in its life-span.

TO [OUTLINE](#)

## HOW WE ORGANISE

The single most important element for today's strategies may be the structure and design of organization. The way we are organised plays a major role in our ability to search landscapes, alter **granularity**, and act on the information created by these activities. The level of our effectiveness will greatly depend on the structure and design of how we organise people, organise production, and organise the flow of information. **Chunking** is a proficient way of revealing both competences as well as, the structure and design of organization. Our ability to define competences in different ways and at different levels develops simultaneously with our ability to define specific units of organization. Each unit is actually an intelligent entity in itself, one that is able to independently search landscapes. Units may be anything -- individuals, cells or teams, disciplines, divisions, or an entire company. Each unit has its own unique possibilities for the exploration of local peaks and distant landscapes. Recombining of diverse interlocking landscapes provides robust adaptability.

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One of the major questions facing today's corporations is, "What's the most effective way to organise to solve a problem as difficult as searching landscapes?" When we are confronted with the countless choices of our search, such as which of the many possibilities to invest in or what design approach to take in the production of an airplane, how do we organise to work toward the best choice? Or for a large company, that is continually improving, yet still losing market share, what should we do about downsizing or tackling major re-engineering endeavors?"

TO [OUTLINE](#)

## ORGANIZATIONAL MODELS

There is an approach to organization that has been developed by those researching complex adaptive systems and, it is particularly useful for working with issues confronting our corporations today. The research made use of computer simulations in which different relationships between components were created and allowed to run to see what would happen. In order to stay in alignment with the purpose and language of the book, the research will be presented in business terms, rather than the abstract computer terms in which it was conducted. The synthesis was done as follows.

An organization was created in which each element was connected to each of its neighbors with all elements having the same number of connections. Tests were created in which the whole was connected in different ways in order to find the best way for individual elements to interact to solve different problems. Various alternatives emerged.

Let's first look at a model of organising that could be referred to as a **socialist organization**. Within this model each individual element was instructed to assess the state of all of its neighbors and then, alter its own state only if that would increase the efficiency of the whole system. The results of the research showed that if the problem was easy and the number of elements was small, the system would optimise rapidly. This implied that for simple problems, universal concern for the good of the whole works. However, if the problem was difficult or the number of elements was significant, then the system would get stuck in a sub-optimum loop or simply flip randomly without settling on any solution. This way of organising looks a hierarchy with a single point of authority.

Another model for organising might be called the **anarchist organization**. Each element was instructed to assess the state of all of its immediate neighbors and then, alter its state to maximize its own efficiency without concern for the alteration's impact on the whole. If the landscape was comprised of many low peaks of uniform height and many solutions were equally acceptable, this system would operate effectively and ignore any challenges made to the whole system or any disturbance in the environment. The system was generally non-adaptive and unstable. This model had the appearance of a **total network organization** but would break down in ways similar to the **socialist organization** when complex problems were presented or there were numerous alternatives of varying value. This model would also produce sub-optimum results where a single focus was wanted as in a Fujima style landscape.

Another model for organising could be referred to as the **dialogue organization**. Each individual element was instructed to assess the state of all of its neighbors and then, alter its state to maximize the efficiency of its own defined **cell**. In this model, the individual's concern is for the **cell** and the **cell's** concern is for its relationship to other **cells**. In this way of organising there is no concern for the whole as such, but the whole is effectively managed as a result of the coordinated communication at **cell** boundaries. The **cells** were connected separately from the individuals. When applying this method of organization to difficult problems, the system would establish patterns that were complex enough to deal with the challenge.

The optimum size of each **cell** and number of **cells** depended on the complexity of the problem. The more difficult the problem, the smaller the **cell** size required. When the number of cells increased beyond a **threshold point**, causing a breakdown in computational and communication ability, a new organization of **cells** was needed. Interestingly enough, the solution of increasing **cell** size and decreasing the number of **cells** didn't work.

TO [OUTLINE](#)

## DIALOGUE ORGANIZATION

What can be learned from the model of the **dialogue organization** is applicable to almost every corporation today, because we all find ourselves in a rapidly changing environment with countless options for improvement and searching, while at the same time, encountering an onslaught of fierce competition. We simply must be organised to solve difficult problems rapidly or we'll find ourselves on a peak that is far from optimum or stuck in an unprofitable valley with no effective way out. The fact that landscapes are shifting so rapidly suggests that, there is no perfect size or number of **cells**. Different areas of the same corporation have varying degrees of problems confronting them all of the time. One particular area of a corporation has different intensities of problems at different times. In fact, the discovery of the appropriate cell size will be evident by its success and, the success itself will alter the optimum cell size for that unit.

The amount of flexibility, adaptability, and innovation that is being demanded in all areas of our corporations is increasing rapidly. **Intelligence** is becoming the single most sustaining competitive advantage. Intelligence includes not only our ability to be flexible but also, our capacity to decide quickly and locally. A corporation that is not attached to its current forms, definitions, or products is best suited to the continual rethinking that is the essence of the strategic questions in rapidly changing times.

Organising by dialogue and **cells** creates the maximum number of "surfaces" with the surrounding environment and the maximum variation in environments. This way of organising is key to being able to see and act strategically. This approach to organization is optimised by having a balance between the varied input of various landscapes, exploration of the space of possibility, and continual improvement on whatever peak is currently being climbed. Attachment to one's current peak is the source of strategic blindness and inhibited strategic action.

Analysts suggested that IBM was fully aware of the changes in their industry but they failed to adjust. The same is insinuated about GM and Ford in the arena of small cars and foreign competition. Xerox, failing to meet the Cannon challenge in a timely way, received the same judgement. The analysts are all making a similar mistake -- identifying the corporation as the individuals in it. Many of the individuals in IBM and the other companies truly did see the new direction of their respective industry and the problems that were going to spin out of that direction. (Although, I suspect that the percentage who saw, **before** the event, was small when compared to the whole - and compared to those who saw what was happening **after** the event.)

The corporation of IBM could not see the direction. It was a classic hierarchy with very little cell structure and lacked the processes of dialogue that go with that structure. IBM had far too few **surfaces** exposed to the outside world, far too few explorers searching for uncharted peaks, and far too few interchanges that demanded resolution at local levels. The ability to chunk the organization and the environment was not an appreciated or developed skill in the company. No one was equipped with the ability to alter the granularity of distinctions or viewpoints. The capacity for dealing with increasing complexity was inhibited. Flexibility in thought and action was not intentionally designed into the organization by the upper echelon.

TO [OUTLINE](#)

## CHANGING LANDSCAPES

We live in a world of interconnected landscapes, or spaces of possibility, that are always changing **due to the action of others, like ourselves, attempting to climb various peaks, or explore and exploit the same spaces of possibility**. As competing entities climb various peaks, they alter the landscape. Some peaks are developed, thus making them higher; in turn, other peaks decline -- maybe the one we're climbing. As we work with the analogy of **fitness landscapes**, it's important not to think about them as fixed, physical landscapes. They are made up of diverse and rapidly changing technologies, marketplaces, products, organizations, and industries. The phenomena of **fitness landscapes** are created by the actions of the entities climbing them.

The development of technologies, such as integrated circuits and micro-technology, made the personal computer possible. Each development created new peaks within its own technology; in addition, whole new ranges of peaks were created in the manufacturing of computers and the development of software. Almost single-handedly, IBM created a landscape (market), but in the long run, it provided no advantage for exploring the space of possibility of the larger landscape that emerged.

Changing landscapes requires the pursuit of a balance between settling down and creating or searching new peaks. A great aid to our success in this delicate balance will come from understanding the principles of the development of complex adaptive system. Our competitive environment is a complex

adaptive system comprised of property, products, codes of conduct, policies, and the interaction of its participants. These can all be found in all living systems -- at least metaphorically. The various elements of any living system behave, communicate, and trade in such a way that a "return on investment" occurs. The form it takes is more energy being created than is required to produce that energy.

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## LANGUAGE'S IMPACT ON LANDSCAPES

A distinctive part of every human system is language. Existing language sets the stage for what can happen next. We cannot develop beyond our language. Science is a language. Professions are languages. Cooperation and coordination of action are a matter of language. As we develop a language around something, we create the privilege of access, common understanding, and mastery for others.

As human affairs emerge and organise, language provides a means for developing and settling a system. There is a particular aspect of language, **contracting**, which provides the possibility for the making of contracts that encourage and support the coordination of action in a social context. This domain reaches far beyond any legal interpretation. In **committed conversation**, the making of requests and promises are the primary speech acts. The public acts of requesting and promising, whether formal or informal, are the basis of contracting upon which the settling of activity is based. The foundation of **committed language** is the current understanding of the world which is being maintained by the language of the social system.

Connections between things are brought forth in language. The past lives in language. The possible actions of our future are inherent in our language.

The stability of a condition is directly related to its depth of connection (integration) to the whole; and the depth of connection can be seen in language. One can utilise this knowledge to assess where an idea, product, or corporation stands. As we develop our understanding of language, we become better equipped to explore and assess the depth of impact of particular actions, i.e. will something create profound changes or will it have a superficial impact? This shifts emphasis from a focus on long-term planning to becoming continually better at sensing, seeing patterns, and interpreting. Shifting focus is a function of flexibility in thinking and organising in cells. The immediate future of a local area is somewhat predictable. And by comparison, the exploration of a distant area is much less so. The distant future of expansive areas is impossible to predict. **Foreshadowing** is available for those who see landscapes existing in the prevailing language.

The **structure of the future** is present in our current conditions. That structure can be revealed, articulated, designed, and redesigned by use of language. An organization can be designed to be so connected with the **structure of the future**, that it is both adaptive and innovative as a creator of that future. The world we live in is not chaotic, nor do statements of unpredictability totally match our experience. We can profoundly influence our future. The integration that is allowed by expansion through increasing complexity -- in the world and in language -- enables one to be very successful at prediction. This ability to integrate rewards some individuals or corporations with the capacity to be exceptional at creating conditions favourable for themselves, while others merely try to keep up. An organization that is designed to match the principles of increasing complexity has an exceptional advantage at being able to both adapt and innovate as it creates its future.

TO [OUTLINE](#)

## DESIGN PRINCIPLES

### 1. THE PRINCIPLE OF EXPLORATION

Life is a process of constant change. The continual increase in complexity gives rise to a constantly shifting environment, to which we must continually learn to adapt. To wait passively for change to impose itself on us, leaves us with an enormous disadvantage. And yet, the actions we take add to the likelihood of sudden change. The best survival strategy is to actively explore the environment and take adaptive action early for a wide range of possible changes. A corporation that is not organised to intentionally explore its present and potential future environments (social, technological, etc.) is not likely to have a long life.

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### 2. THE PRINCIPLE OF HILL CLIMBING (OR FORGONE GAINS)

We constantly seek to be king of the mountain or maximise the returns of our current game. In doing so, we climb toward peak performance. But in this pursuit, we ignore the exploration of other alternatives. For all but a very few, this strategy gives victory at only a low-level game. The inevitable change inherent in landscapes leaves us wide open to the possibility that the hill we are climbing may be losing ground relative to others. Our impulse to maximise the game that we are playing prevents us from exploring possibility. It is essential that we invest some of our profits in exploration even though, for the time being, we could increase our profit by forgoing this exploration.

### 3. THE PRINCIPLE OF CHUNKING

At any given time, we are only able to handle chunks of a particular size. So we automatically break things into chunks that we consider manageable. To increase creativity or our ability to generate new opportunities, we must develop the ability to make our **chunks of experience** larger or smaller, at will. This allows us to create new and unique ways of experiencing things and linguistic symbols that go with that and, at the same time, not disrupt our capacity to manage complexity.

### 4. THE PRINCIPLE OF ORGANISING BY CELLS (TEAMS)

When things are simple, central processing or control are sufficient to manage them. The more complicated, complex, or difficult a situation, the more essential it is that we work in cells or teams. This way of working is also necessary for exploring spaces of possibility. When confronted with complexity, the corporate tendency is to centralise control. It's considerably more effective to arrange the organization in cells that are connected loosely by group, but not individually. The more difficult the challenge being worked with, the more numerous and smaller the teams should be - with limited and carefully designed communication between them.

### 5. THE PRINCIPLE OF COMMITTING LANGUAGE

We have failed to distinguish speech acts yet, these are the foundation for coordinated action between human beings. The linguistic acts that coordinate action are those that make a commitment and develop a network of commitments. The act of committing is an opening for partnership and coordination -- not blame. A network of such commitments produces extraordinary results.