Playing the Game of Change:

Creating Conditions to Thrive

Father: Life is a game whose purpose is to discover the rules, which rules are always changing and always undiscoverable.

Daughter: But I don't call that a **game**, Daddy.

Father: Perhaps not. I would call it a game, or at any rate "play". But it certainly is not like chess or canasta. It's more like what kittens and puppies do. Perhaps. I don't know.
—Gregory Bateson

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A Shift of Perception

The real voyage of discovery consists not in seeking new landscapes, but in having new eyes. —Marcel Proust

The tension of our times is that we want our organizations to behave as living systems, but we only know how to treat them as machines.
—Margaret Wheatley

The layers of complexity in the issues we live today, the ongoing rapid and often unforeseen changes, the sense of things being out of control — all signal that conventional wisdom (derived from a mechanistic worldview) does not provide all the answers. Albert Einstein's often quoted advice: "*No significant problem can be solved from the same level of thinking that created it.*" gives us a clue for an escape from the confusion. The premise of this synthesis is that leverage in today's turbulent world comes from appreciating — conceptually and experientially — the patterns and dynamics *within* change in complex adaptive systems. Appreciating what is going on within change requires a **shift of perception** to accommodate both object <u>and</u> relationship, parts <u>and</u> the whole, content <u>and</u> pattern, stability <u>and</u> instability, being <u>and</u> becoming.

Supported by Aristotle's claim: "*The task of science is to explain the principles and functions of nature's complexity and changes.*" the Game of Change offers a coherent overall framework derived from contemporary science's exploration of complexity, instability, non-linearity, evolution, paradoxes, etc. Based on an understanding of how order and change arises from states characterizing living systems — complex, irregular, chaotic — the

Game of Change distinguishes three aspects of the spiraling cycle of change — Emergence, Metastability and Transcendence — which can be likened to birth, maturation and death/transformation.

This artificial separation is intended to highlight key paradoxes *within* change. Briefly, in *Emergence* — <u>where the aim is to spontaneously generate a new form of order out of disorder</u> — change relies on the collective result of self-organizing, spontaneous, non-linear, local, untraceable interactions to emerge an unexpected new order. In *Metastability* — <u>where the aim is to survive by operating at the "edge of chaos"</u> (the transition zone between system disintegration and rigidification where contradictory drives are dynamically balanced for optimal fitness in a co-evolving environment) — incremental, adaptive, gradual change embodies the experience gained in complementing stability and instability, cooperation and competition, current efficiency and long-term effectiveness, **without violating** the pattern of organization, the "sense of self" enacted by the system. In *Transcendence* — <u>where the aim is to break through the constraints of the past in search of possibilities to evolve further</u> — radical, discontinuous change (destruction) opens possibilities for the emergence of new patterns of information and connection that supersede the established order, the created forms.

Discernment — the ability to see things as they really are versus how they are supposed to be or feared to be — makes one more responsive to the dynamics of change. Appreciating the principles and dynamics operating behind the events and the details is invaluable in accurately perceiving what is happening as it happens and thus, in mastering *change-ability* — in identifying what conditions to create *to achieve greater congruence between intentions and outcomes*. Notwithstanding, with chance, randomness, surprise, unpredictability of the future, and the reign of the specific over the general — in other words, *with the non-linear nature* of complex adaptive systems — there are no guarantees. There is just the playing of the game.

Findings from contemporary science resonate with human experience, supporting what philosophers, poets, and spiritual traditions have been saying for centuries. Hence, *there is nothing new* (other than scientific jargon) in the Game of Change. The spiraling cycle of change is something we already know — *intuitively* — and have responded to in myriad of ways. Intellectually, on the other hand, the ideas advanced in this synthesis may disturb as they invite a loosening of our grip on certainty — a certainty stemming from a logical, linear, clock-like worldview founded on the structure and behavior of material objects. Unlike machines where change is installed, it is not possible with individuals and human-based systems (teams, organizations, societies, etc) to foresee and control outcomes with any certainty. Links between cause and effect are lost in the unfolding of events in non-linear systems.

Since human-based systems are subject to the same principles that govern complex adaptive systems (a key premise of this synthesis) they cannot be dictated to or directed in any reliable fashion. Like complex adaptive systems, they balk (often in creative, unanticipated ways) at the imposition of generic solutions or "magic-bullet" recipes concocted by external experts. Nonetheless, their processes and behaviors can be tweaked, advised, incited, shepherded, catalyzed by environmental conditions. Thus, change agents intervene most effectively in the inner workings of a human-based system by *cultivating the conceptual, emotional and logistical conditions* favorable to the natural unfolding of desirable results and qualities. Like gardeners who can *only* create the optimum conditions under which plants can grow, change agents do not "manage" change directly but act to *create contexts* for

individuals and human-based systems to improve their change-ability. Consequently, implications of each aspect of the cycle of change are outlined in terms of creating conditions to attune to the natural unfolding of the "game."

Talmud's insight: "*We don't see things the way they are. We see things the way we are.*" applies to this work in progress. The Game of Change is but one possible synthesis of the nature of change — a synthesis colored by the author's own quest for a new set of lenses to view the perplexities of organizational development. As such, it is best approached with an explorer's openness to inquiry. The possibilities of the ideas advanced in these pages depend on a **personal engagement** with them (thinking and acting as if they were true) in order to convert "hollow" language — mere academic arguments, into "solid" language — meanings anchored in experience.

EMERGENCE: Tinkering a New Order

Recent insights into the nature of living systems suggest that life's unique capabilities for novelty, learning, and adaptation come about not by way of design but through emergence. —Fritjof Capra

Contrary to some of our most deep-seated beliefs, mess is the material from which life and creativity are built, and it turns out that they are built, not according to some prior design, but through a process of spontaneous self-organization that produces emergent outcomes. —Ralph Stacey

Complex adaptive systems produce "order for nothing" — order without any blueprint, master plan, or centralized control. They rely on disorder/chaos to generate new order through a process of spontaneous, bottom-up self-organization among autonomous participants answering to their own rules and needs.

The process of emergence is distinguishable into four interdependent aspects: Begin with Interactions; Spawn Information; Expect Unintended Order; and "In-form" a Structure.

1. Begin with Interactions

Rather than thinking of an organization as an imposed structure, plan, design, or role, it is clear that in life, organization arises from the interactions and needs of individuals who have decided to come together. —Margaret Wheatley

Without interactions, nothing happens. In the quantum world, *interactions* are ALL there is to reality. Quantum wave functions are not probabilities of "things" but probabilities of interactions. Subatomic particles appear and disappear as a result of continual interactions between different quantum fields.

Interactions that are routine or designed to achieve pre-determined outcomes do not engage the process of emergence. Only interactions of a spontaneous, non-linear (in all directions), local, unpredictable, untraceable, self-organizing nature can foster the tinkering of a new order.

Needs — anything from surviving to creating original newness, anything to receive or to contribute — shape interactions by providing the context for exchanges between participants.

CREATING CONDITIONS

We can no longer stand at the end of something we visualize in detail and plan backwards from that future. Instead, we must stand at the beginning, clear in our intent, with a willingness to be involved in discovery. —Margaret Wheatley

While self-organizing is time-tested, it does require a culture of self-motivation, self-responsibility, and personal accountability.

—Tom Peters

At its essence, every organization is a product of how its members think and interact. —Peter Senge

The more we access one another, the more possibilities there are. Emergence requires *participation*. The kind of participation that welcomes the messy web of unplanned connections that fosters emergence requires knowing needs, showing up, taking responsibility, and being open to outcomes.

Knowing what calls us to participate is important because needs drive us to fulfill them and thus, influence what we choose to notice.

Showing up is about getting involved in the co-creation of our world — not just waiting for others to act. As the old adage "*If it is to be, it is up to me.*" attests, showing up is about exercising personal leadership as if we make a difference, as if our unique talents add value and meaning for others.

Taking personal responsibility involves standing behind our actions and being answerable for all that we do or don't do. It involves owning up to our part in both current and future state of affairs.

Being open to outcomes is a receptive attitude that embraces new perceptions of reality. Being open to outcomes involves connecting with all possible resources, ideas, experiences, and people. It means approaching each interaction as an artist approaches a blank canvas — without pre-judgements — because in emergence we can't know ahead of time whose potential will manifest in what way until we are in relation. In other words, skills and abilities are often evoked by the situation.

2. Spawn Information

Information is a difference which makes a difference. —Gregory Bateson

In complex adaptive systems, increased interactions = increased information flow = increased disorder. The key to moving to a new order from the disorder lies in participants' **exploration of their differences** (via chemical, behavioral and/or language exchanges) to discover new ways to get their needs met. Participants' different experience of one another spawns *new* information which self-organizes into local agreements about how to belong together to get needs met.

CREATING CONDITIONS

An organization that creates information is nothing but an organization that allows a maximum of self-organizing order out of chaos. —Ikujiro Nonaka

To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science. —Albert Einstein

There is no ultimately *correct* interpretation of the "real world." In quantum logic, we continually bring forth personal and collective realities via the sense-making processes of observation and interactive communication. Since information self-generates out of new relations and non-linear connections, a new interpretation of "reality" — a new way of making sense of experiences which leads to a new agreement on how to belong together to get needs met — spawns out of multiple, diverse, small group dialogue around questions that matter, questions that tap underlying needs.

Questions that matter transform casual conversations into collective inquiry. Exploring questions that matter raises the pressure for a new synthesis out of the "disorder" of disconfirming information (anomalies, inconsistencies, contradictions) and of ambiguous information of no immediate value or with no predefined outcome. Sense-making of such information is

catalyzed by letting go of persuading others, letting go of certainty and agreements, letting go of "right" answers.

Additionally, spawning a new interpretation — especially one that broadens possibilities — of a meaningful topic is facilitated by the same qualities characteristic of dialogue: voluntary participation; allegiance to a guiding criterion outside of everyone's views (truth, the bottom line, survival, wisdom, etc); self-disclosure; willingness to change our mind; suspending personal beliefs to better grasp different interpretations; exploring (without attacking or defending) underlying assumptions; honoring **all** perspectives as valid facets of a complex world; appreciating differences without reconciling them; accepting who we already are and supporting each other with trust and respect.

Storytelling and creative play complement exploratory dialogue as processes that spawn information. Stories allow us to step in the steps of others, to participate in the meanings they made. By recounting *experiences* rather than advocating ideas, storytelling offers a way through polarization and conflict in the pursuit of new meaning.

Manipulating analogies and metaphors, images and speculations, real-world observations and fantasies — *without a clear purpose* — is the essence of creative play. The irreverence of creative play softens our inbred resistance to seeming "incorrect" and thus, sets free our innate capacity for curiosity, wonder and experimentation. *To play is to learn.*

It is important to note that spawning information and making decisions are **antithetical** processes. Settling too early into concluding answers or decisions by-passes emergence.

3. Expect Unintended Order

not so much looking for the shape
as being available
to any shape that may be
summoning itself
through me
from the self not mine but ours. —A.R. Ammons

The whole universe, it seems, is lawful and yet it has freedom of choice. The price for this freedom is an inability to know the final destination or to be in control of the journey. —Ralph Stacey

Local agreements on how to belong together to get needs met generate local interdependent connections. **Order** is the collective result of a **pattern** of local interdependent connections — a network of relationships based on **shared information**. Enfolded in the network of relationships is a **pattern of organization** — a SELF. This Self — the new order emerged from disorder — is the *center*, the *identity* that determines the essential *qualities* of the new system.

The emerged Self displays properties and capabilities that *never existed before* and could not be predicted from the parts. The unpredictable, qualitative change (as in 2+2=apples) expressed in the new pattern of organization is always different from the mere sum of its parts. One property of interactive, non-linear feedback systems (complex adaptive systems) is *unpredictability* — it is not possible to foresee the global outcome of interactions or to reduce the global pattern to participants' behavior or characteristics.

CREATING CONDITIONS

The "emergence of the unexpected" implies less emphasis on predictions and more on explanations. —Mika Pantzar

The essence of being a leader is to make sure the organization knows itself. —Mort Meyersen

In refusing to accept the truth for what it is we deny the power contained within it. —Kurt Hanks

How a pattern of organization — the unintended order, the genuine novelty, the unexpected *qualities* which cannot be inferred from participants — emerges is a **mystery**. Nevertheless, since the Self captures how participants *experience* one another, accessing individual and collective experiences in relation to the "whole" can unveil the identity of the greater system.

Noticing within ourselves our experiences of integration into the greater system requires *being present* to the here-and-now. Being present means paying attention — to feelings, fleeting thoughts, circumstances, bits of imagery, pieces of information, minute influences — to discern what is happening as it is happening. Observing our own presence — our own participation — *within* the larger picture offers greater clarity into our personal responsibility for creating the conditions to achieve greater congruence between intentions and outcomes.

Routine group reflection on questions such as: "What are our *in-practice* commitments to each stakeholder groups?" or "What has already happened that will create the future?" enables us to surface our collective experiences of the implicit and explicit agreements on how to belong, the principles and values displayed in our behaviors, the needs that have called us together. These factors are embodied in stories. Stories allow us to reconnect events and thus, to identify the consistencies which underlie the ongoing stream of action.

Regularities in individual and collective experience constitute the "rules of interaction" — the pattern of organization that shapes our participation in the greater system. Noteworthy however, is that what we want, what we fear, what we are seeking — all undermine our ability to discern the regularities in actual experience and

thus, to determine appropriate courses of action to achieve greater congruence between intentions and outcomes. Truth often extracts a price we are unwilling to pay.

4. "In-form" a Structure

This is not a universe of things, but a universe of the "no-thing" of information, where meaning provides the "software" for the creation of forms. —Margaret Wheatley

The interdependent whole honors diversity as the whole becomes much greater than the sum of the separate parts. —George Land

"In-forming" is a process of structuring information via messy networks of feedback loops. The ensuing steady, all-directional flow of information welds interdependent relationships into a structure that continuously "embodies" the pattern of organization (Self) via the three distinguishing properties of complex adaptive systems: self-regulation, self-renewal, and self-organization.

Self-regulation is the ability to exchange energy, matter and information with the environment such that the whole — the common fate — is preserved by members who autonomously initiate, amplify, dampen, or adapt to disturbances hitting from without or generated from within the system. Self-regulation creates the necessary resiliency for "errors" to lead to learning.

Self-renewal is the ability of the parts to interact in such a way as to continuously re-create the whole, and of the whole to influence the interactions of the parts to that end.

Self-organization is the ability to spontaneously respond to disorder with new behaviors and structures generated from inner guidelines rather than external imposition. Thus, an emergent structure is always a **temporary** solution, changing to fit

current needs, changing to reflect experience gained (learnings) in interaction with the environment.

The feedback structure also generates the specific patterns of behavior of the system.

CREATING CONDITIONS

The essential act of organizing is setting a Self in motion, bringing forth a Self in the world.
—Margaret Wheatley

What we call an organization is more than anything else a pattern of knowledge and an information flow made visible. —Clay Carr

To live in an evolutionary spirit means to engage with full ambition and without any reserve in the structure of the present, and yet to let go and flow into a new structure when the right time has come. —Erich Jantsch

The Self emerging out of information spawned in networks of *inquiring* conversations, becomes "in-formed" via *decision-making* conversations. Given that a complex adaptive system is webbed with feedback loops such that information circulates in all directions, focusing decisions on the interactions needed to ensure prompt, specific, direct **feedback is priority** in tinkering a structure that self-regulates, self-renews, and self-organizes. A viable structure is one where members have access to information everywhere in order to respond appropriately and to influence the outcomes of their actions. Appropriate actions are those having to do with: carrying out the primary tasks that maintain the system; sustaining the support of others; remaining in accord with the whole; keeping options open; retaining flexibility; revealing errors as soon as possible; and applying learnings from mistakes, successes, and new experiences.

A structure that actualizes the Self — the general *qualitative* features of the pattern of organization — is always a work in progress, a temporary solution that works for now, a provisional answer tailored to the specific experiences of participants in their situation. When members value performance and adaptability over form, they continually question and modify the structure to meet current requirements.

A viable structure does not limit the unplanned connections that become necessary in the course of interaction. Short, collaborative "learning loops" of reflection, experimentation, and action help to understand, create, maintain, and continually refine the interdependent relationships and processes which enable the whole to exhibit its systemic properties.

Jazz is a fitting metaphor to describe the "in-forming" influence of the Self. Compared to the written, detailed notation relied upon by classical music performers, jazz does not precisely prescribe what musicians are to play. Jazz's notation is below the surface, an underlying girder that supports and "in-forms" the performance, providing the basis for collective improvisation. When the Self is known by all, all players reference the same "rule book" in shaping their own role and making congruent decisions at the local level.

In other words, "in-forming" collaboration depends on clear alignment around shared purposes and shared meaning — allowing for shared ownership for results *without sacrificing* autonomy and diversity. Through a consistent and personally meaningful sense of Self, committed participants are able to act autonomously and yet remain in accord with the interests of the whole. Individuals, teams, work units, organizations, professions, etc, are able to improvise their own unique contributions to organizing the Self and to articulate their own accountability for outcomes.

METASTABILITY: Sustaining Paradoxes

A great truth is one whose opposite is also a great truth. —Thomas Mann

The best sign of intelligence is the ability to hold good, but contradictory ideas in one's head at the same time. Character is to act on two good contradictory ideas. —James Champy

The art of progress is to preserve order amid change and to preserve change amid order.
—*Alfred North Whitehead*

The dictionary definition of paradox reads: self-contradictory statement that may nonetheless be true; a statement conflicting with commonly accepted opinion of what is reasonable or possible. The simplest way to avoid paradox is to deny its existence by rejecting half of its self-contradictory or "unreasonable" proposition. Yet, either/or statements do not capture all of reality. The presence of paradox is an inherent feature of the universe. Empirical data indicate that everything in the universe exists in two states simultaneously — solid and immaterial, particle and wave, being and becoming.[1]

In the context of metastability, "existing in two states simultaneously" takes the form of a dynamic tension between stability (via the pattern of organization, the Self) and

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[1] Integral to the solid state is a wave state where the future potential — the becoming of the being — lies. The wave of probabilities collapses into an actualized state (a particle, an event, etc) by an act of interaction. For instance, both aspects of a paradox co-exist but we "see" (collapse the wave of probability) the one we set the "experiment" up to see — the one aspect we want or expect to see. According to quantum theory, the material world does not have objective, pre-determined features but comes forth from interconnections among various processes of interaction. In other words, the answer is: "*It all depends.*"

instability (in the specific actualization of the Self in interaction with its environment.) Metastability — globally stable instabilities — is thus an expression of *complementarity of opposites*. This principle states that mutually exclusive or contradictory behaviors are *both* necessary and integral aspects of one and the same phenomenon and accordingly, are mutually complementary (the opposites include each other.) Consequently, in the pursuit of survival a metastable system is driven by both competition and cooperation, both chance and necessity, both cohesiveness and diversity.

Sustaining paradoxes — <u>both</u> provoking destabilizing tension <u>and</u> protecting from it — is only possible when the system operates at the "edge of chaos." Walking is a fitting metaphor to describe the persistent disequilibrium (never falling but never ceasing from falling) which is the hallmark of a system poised at the edge of chaos — at the transition zone between system disintegration and ossification. Just like transferring the weight to the foot in front until disequilibrium is reached and the other foot (now in front) takes the load, change in one direction automatically sets off counterchange in the opposite direction, thus producing a new balance — but an unstable one that leads to still further changes. Operating at the edge of chaos is about dynamically balancing contradictory drives to enable the <u>most effective learning</u> to occur.

A metastable system does not *resolve* paradoxes — collapsing opposites into a unity engages the Transcendence aspect of change — but continually "re-arranges" the diametrically opposed forces into temporary solutions that embody learnings (experience gained in interaction with the environment) to fit the needs of the moment. Learning "regulates" the dosage of novelty and confirmation, of freedom and structure, to balance the system at the edge of chaos.

In the context of metastable human-based systems, "existing in two states

simultaneously" also takes the form of a dynamic tension between the formal system (the stable Being) and the informal system (the destabilizing Becoming.) The formal system (embodied in procedures, customs, habits, rituals, control systems, policies, responsibility and authority definitions, task descriptions, task-related roles, etc) exists to secure stable, predictable, efficient, system-wide patterns of behavior compatible with the system's primary tasks (what members need to do to sustain themselves and the support of others external to the system.) The informal system is a kind of shadow of the formal system, consisting of unofficial social and political links created by members reaching out for the resources, information, and relationships needed to continually learn and adapt to novel situations.

At the edge of chaos, both aspects operate in tension with each other — the formal system by reinforcing status quo and the informal system by seeking to alter it. In other words, compliance to structure and conformity to the system's Self <u>as well as</u> individual freedom to experiment and continuously learn uphold metastability in human-based systems.

The maxim: "*The more things change, the more they stay the same.*" captures the incremental, adaptive variations over time characterizing change in the context of Metastability. The shift from Emergence to Metastability is the shift from development to performance. The purpose of change in Metastability is **survival** — the preservation of the Self, of the pattern of organization. The replication of success (survival) is supported by changes which improve either current efficiency or long-term effectiveness *without violating the "sense of self" the system is enacting*.

The following discussion of two "complementarity of opposites": **Complement Referencing the Self <u>with</u> Co-Evolving the Self** and **Complement**

Optimizing Performance <u>with</u> Diversifying Locally illustrates the interplay of opposites in sustaining paradoxes.

Complement Referencing the Self <u>with</u> Co-Evolving the Self

Search for some kind of constant and permanent suspension of your temptation for certainty.
—Francisco Varela

We cannot choose one perspective over another and expect it to work in all situations without introducing a distortion which eventually bounces back on us in unexpected ways.
—Michael Greenwood

A metastable system consists of systems nested within other systems, of "wholes within wholes" arranged in a stratified order from lower to higher levels of complexity. A member at one level is a system — with its own Self — one level below. A metastable system preserves its particular organization of complexity (stratified order) when mutual self-interest is served — when the survival and self-actualization needs of the sub- and higher-level systems are best satisfied via a symbiotic relationship.

To remain poised at the edge of chaos, a metastable system needs <u>both</u> cohesion <u>and</u> diversity to co-exist. To sustain this paradox, members display the opposite but complementary qualities of self-assertion and integration. Members <u>both</u> express their unique Self through autonomous action (self-assertion) <u>as well as</u> cooperate in accord with the *whole* — the next higher level of complexity (integration.)

To uphold the integrity and cohesiveness of the whole, members reference the Self — the *common* sense of the whole, the purpose and values shared and experienced by all — of the "community" they form. The Self is the sense-making process of the system. The Self notices and interprets information

consonant with the meanings invested in its structure (the complex web of interdependent relationships.) In other words, the Self filters for information it knows how to use to serve its current exchanges with the environment. Thus, self-reference is a kind of distributed control, inciting members toward particular behaviors and actions based on the meaning derived from an interaction, event, idea, etc.

Metastability at the edge of chaos is dependent on the ongoing tension between negative and positive feedback, where one restrains while the other provokes. All formal systems are based upon negative or compensating feedback, *damping down disturbances* to steer the orderly performance of primary tasks (the current survival strategy.) When complex adaptive systems reach their metastable state, they self-regulate to stay that way, counteracting superficial changes through their "immune system" — their sense-making Self.

Yet, diversity enters the picture via the fact that the Self of the system members reference make up only one of many realities. Through self-assertion, members exercise their autonomy to reference a number of sense-making sources (individual, system, supra-system, etc) for choosing what to notice, what meaning to assign, and what action to take in response to that meaning. Thus, behind the stable facade of the formal system, the informal system operates via positive feedback — *amplifying disconfirming information and differences* to escalate small events into large-scale consequences, tiny variations into unexpected outcomes, disconfirming information into new meaning — in order to engage in **co**-evolution. Co-evolution is the ongoing dance of incremental, adaptive, gradual, reciprocal change between all players and the environment they shape.

The informal system needs to operate in the transition zone between system disintegration and ossification in order to improve the *fitness* of the formal system. Fitness is neither total adaptation to, nor total independence from, an environment but rather a *property of interaction*. In a co-evolutionary world, a metastable system survives as long as its *expression* — its specialization, its unique capabilities, its *Self* — **continues** to create *valued* opportunities for members and neighbors to get their needs met. Thus, systems at every level co-determine the conditions of each other's existence, of each other's interdependence.

The non-linear feedback network structure of a metastable system — especially its informal aspect — implies that the specifics of co-evolving the Self can not be entirely intended, predicted, directed or controlled. (Non-linearity means that an effect is not proportional to a cause, that very slight variances can escalate into large-scale consequences or unpredictable results when repeatedly fed back in self-reinforcing loops.) The co-evolutionary process is driven mostly by adaptive and transformative learning. *Adaptive* learning occurs when the behavior is adjusted in the light of its consequences for a particular purpose. *Transformative* learning occurs when the sense-making underpinning the behavior is altered in the light of the responses the behavior provokes. Whereas adaptive learning targets the structure of the system, transformative learning targets the Self, the *meaning* the structure is enacting.

"Threatening" co-evolutionary developments expose previous learning (embodied in the formal system) as maladaptive. To perform new primary tasks or perform them in novel ways in response to environmental challenges, *what the Self perceives* and *what meaning it assigns* to the disconfirming information must change. In other words, an aspect of the sense making of the formal system must be superseded by the "fitter" learning in order to be enacted in a "fitter" structure. In the context of metastability, the "fitter" change *must* be consistent with the system's history and with its environment (or

else the system engages the Transcendence aspect of change.)

CREATING CONDITIONS

We are always in a dance with the context we find ourselves in, trying to match our rhythm to the movement of the environment and have the environment move to us. —*Kurt Hanks*

Men are disturbed not by things that happen, but by their opinion of the things that happen.
—*Epictetus*

He who confronts the paradoxical exposes himself to reality. —*Friedrich Durrenmatt*

Since the future is unknowable and uncertain — emerging unpredictably, moment by moment, from the non-linear, self-organizing interactions of co-evolving players in the internal and external environments — the informal system needs to <u>continually learn</u> in order to continually "become," to continually shape itself to new understandings. Learning, in this context, pertains to the ability to navigate change by changing oneself to remain harmonious with the co-evolving environment. A metastable system operates at the edge of chaos — learns most effectively — when conditions that <u>both</u> contain <u>and</u> provoke anxiety are present. Anxiety is a key control parameter in keeping poised between the stable and unstable zones in human-based systems.

<u>*Container Conditions (for stability)*</u>

In a chaotic world, the organization must have stability at its core. It must have a center, a coherent, consistent sense of self.
—*Margaret Wheatley*

The underlying reason for the resistance is the total system's attempt to maintain its integrity.
—*Clay Carr*

A clear, consistent sense of Self of the system members jointly organize around contains anxiety by creating the safety and comfort of the known. A clear, consistent formal system Self (mission, norms, assumptions on how to do business, values and behaviors rewarded, current decisions and activities, official interpretations of its history and sense of its future, etc) acts as a "magnetic north" — a common orientation to what is important. The result is a shared world of significance to reference — shared facts, ideas and mental models that define "good judgement" at the level in question (group, organization, industry, society, etc.)

Using *good judgement* — a collection of perception models rooted in past experiences — is how we filter for purposeful information. Purposeful information is anything that confirms current structures and that we know how to use to accomplish the formal system's current primary tasks. To safeguard status quo however, good judgement blocks aspects of our perception. By screening out much of current possibilities and threats, good judgement contains anxiety.

The various measures of the formal system are devised to provide the purposeful information required to perform primary tasks in accordance with beliefs about what is important. Given competing "selves" shaping decisions and actions in a multi-layered world, complementing conventional performance indicators with feedback on the Self — the issues, experiences and stories that capture agreements on how to belong, as well as the values and principles shaping behaviors, decisions, joint actions — facilitates the process of *self*-reference and thus, good judgement as to what is important.

A clear, consistent sense of Self acts as an "internal compass," minimizing the need for operational controls and command hierarchies. These "external," deviation-curtailing feedback strategies are necessary to counteract the *self-maximizing* behaviors

(which eventually destroy the host system) that result when members do not (or cannot) reference or assume responsibility for the higher-level system's Self. Conversely, when members internalize the "big picture" — the shared meanings of the higher-level system's Self — they can act autonomously to balance the greater system's needs with local interests (as in the motto: "*Act Locally Think Globally*"). This balancing act is stabilizing as long as the self-preservation needs of the greater system are not emotionally perceived by its members as a threat to their *own* self-preservation needs.

Provoker Conditions (for instability)

The dogmas of the past are inadequate for the stormy present and future. As our circumstances are new, we must think anew, and act anew.
—Abraham Lincoln

Always act in such a way that further possibilities arise. —Heinz von Foerster

Containing anxiety without abandoning the edge of chaos (in favor of increased order/stability) is more likely in conditions where a culture of trust, tolerance and respect prevails and where power differences are exercised with compassion for fears of failure and embarrassment as the informal system challenges "good judgement" in the interest of superseding maladaptive learnings embodied in the formal system.

Learning begins with perception. To keep the meanings enacted by the Self relevant to the needs of its co-evolving internal and external environments, members need to keep attuned to environmental information — especially through *direct and routine* contact between themselves and with customers, suppliers, regulators, competitors and other enterprises. Furthermore, they need the opportunity and capacity for honest self-reflection — for questioning, validating or revising assumptions, beliefs, perceptions,

mental models, values, and experiences in ways that create *greater possibilities*. Greater possibilities are created by *broadening understanding* of what does and does not work under what circumstances.

Transformative learning changes the way of perceiving, of thinking, of making sense of the world, of interpreting and assigning meaning. The informal system engages in transformative learning when members **play** with anomalies and contradictions. Play — where real-world observations and fantasy come together in the form of metaphors, analogies, simulations, visions, or scenarios of possible futures — invites new experiences that challenge old views.

Via political maneuvering, experimentation, and other "noise amplification" (positive feedback) processes, a successful new meaning comes to supersede an aspect (an assumption, belief, perception, value, etc) of the formal system's Self.

Complement Optimizing Performance with Diversifying Locally

An adaptive system must trade off between exploiting a known path of success (optimizing a current strategy), or diverting resources to exploring new paths (thereby wasting energy trying less efficient methods). —Kevin Kelly

What is required for efficiency now is the enemy of what is required for future fitness.
—Ralph Stacey

If one thinks of the Self in *"Referencing the Self with Co-Evolving the Self"* as the compass, the propensities outlined in this next "complementarity of opposites" are the map — the operationalization of the Self.

To survive competition, a metastable system co-evolves towards increased efficiency — towards a structure that minimizes resources to be imported from the environment to ensure self-renewal. In other words, a well-

established system strives to expend the *least* amount of effort and resources that will support both continuity of the Self and growth through replication of the *success pattern* — that organization of relationships that meets the needs of members and external stakeholders at a given moment.

Efficiency gradually increases through trial and error — through *adaptive* learning where feedback from consequences of a behavior is used to improve its performance. The **ultimately** efficient system is one which has optimized its internal organization (the flows of information, activities, interactions, people, money, equipment, etc) to **fully adapt** to its **current** internal and external environments. Yet, the more a system succeeds in its niche, the more it behaves in a regular predictable manner that reinforces its status quo, the **less** resilient in the face of turbulence it becomes due to the rigidifying effect of equilibrium. A state of equilibrium in a complex adaptive system is one where no new information enters, no new learning is provoked, no adaptive change occurs. Too much adaptation, too much efficiency, too much stability atrophies learning skills. When members continue acting upon unquestioned assumptions — sustaining the illusion of a predictable environment — further learning is impaired, rendering them vulnerable to changes in strategies pursued by others in a co-evolving world.

Order **persists** *far from equilibrium* — in a state at the edge of chaos. Far from equilibrium conditions are produced by continual disturbances hitting from without or self-amplifying from within the system. A well-established system depends on innovations (doing things differently) to remain at the edge of chaos. Consequently, a metastable system builds in excess capacities and redundancies — that is, inefficiencies — to foster diversity via local tinkering of solutions. Diversity handles the requirement for continued effectiveness (doing the right thing for long-term survival)

by creating more niches, more possibilities of interaction to get needs met. Thus, when one link in the web (member) is destroyed or when one strategy no longer works, other connections, other solutions are available to enact what is required to preserve the Self.

A metastable system generates diversity in an emergent way, starting with small changes at the periphery where the stabilizing influences of the system are the weakest. <u>Diversity is contingent on autonomous action</u>. *Autonomy* — the flexibility to form new internal and external connections by generating, amplifying or dissipating disturbances — enables members to respond to local needs and contingencies with incremental, adaptive variations in structure.

When a local structural change both counteracts competing strategies and elicits cooperation by proving to be more efficient (or more of whatever is valued by the Self) than the previous structure — *while still preserving the integrity of the whole* — it becomes part of the purposeful information flow and core network of relationships. In other words, a local diversity becomes "institutionalized" to optimize the performance of the higher-level system.

Optimization is about leveraging, at the level of the whole, what is working anywhere in the system. In complex adaptive systems, optimization does not import or impose change on members. Rather, optimization occurs when — *as a consequence of learning* — participating members reach a different agreement on how best to relate to one another in the interest of efficient task performance.

CREATING CONDITIONS

The forces that operate to lock an organization into a successful strategy, to suck it into the stable zone, seem to be extremely powerful. The antidote is continually to seek to keep the shadow

system on the boil, to keep coming up with novel ways of doing this and then containing the anxiety that is raised. —Ralph Stacey

For a metastable system to operate at the edge, members continually re-arrange paradoxes. As anxiety is a natural response to paradoxical situations, conditions that <u>both</u> contain <u>and</u> provoke anxiety come into play in balancing the tension between current efficiency <u>and</u> long-term effectiveness, between conforming for performance of current primary tasks <u>and</u> exploring differences for learning and long-term survival.

Container Conditions

No autopoietic [self-organizing] *structure can stabilize itself forever, but it has, nevertheless, to defend itself to its utmost and to damp the fluctuations. If it would not do this, nothing much would come of evolution. —Erich Jantsch*

The formal system's structure operates via negative feedback to keep the organization in the stable zone. The formal system's regulatory and maintenance activities (such as planning, budgeting, performance monitoring, rewarding conforming behaviors, etc) *damp down small disturbances*, "locking-in" those stable, orderly, predictable behaviors to efficiently perform primary tasks — thus enabling self-renewal of the organization.

Negative feedback is not inherently bad. By constraining activities to those that have proven to work in a given environment, negative feedback steers an organization to "stick to its knitting" — to perpetuate the successful strategy. Change in this context is <u>planned</u> and focused on both elaborating/expanding the winning strategy and on making routine operations more efficient. This more-of-the-same-only-better line of thinking presumes that the environment is well-known and stable.

The repetition of previous success formulas by a <u>functionally efficient</u> formal system acts as a most effective container of the anxieties unleashed by the subversive activities of its informal system. Because the orderly formal system suppresses surprises (negative feedback) to keep an organization performing according to pre-determined intentions, it provides the requisite stable facade — the illusion of certainty — behind which the destabilizing learning processes vital to long-term effectiveness can be played out. The constraining effect of the formal structure acts as a psychological "safety rope" for behind-the-scenes working out of undermining (to the status quo) solutions.

Provoker Conditions

Never, ever rest on your laurels. Today's laurels are tomorrow's compost. —Tom Peters

Nature requires excess capacities and redundancies for evolutionary creativity. If every fiber of an organism's being were dedicated to some productive use, nature would have no raw materials with which to create novelty.
—Mark Youngblood

It is critical levels of diversity that enhance further learning. —Ralph Stacey

The demand for efficient performance inhibits learning by institutionalizing routine — thereby compromising the organization's resilience and effectiveness in a co-evolving environment. The formal system remains effective — while at the same time being efficient at producing and marketing goods and services (primary tasks) — when the informal system is in continuous flux, keeping the organization at the edge of chaos by not being fully adapted to the current environment. Just like burning a firebreak mitigates the destructive effects of a forest fire by keeping it small, the informal system's role is to constructively undermine the status quo in the interest of effectiveness and thus, future fitness.

Whereas change in the formal system (negative feedback) is an intrusion, change in the informal system (positive feedback) is its lifeblood. High tolerance of risk-taking and trial and error learning (that is, high tolerance of anxiety) as well as surplus resource and time are necessary to fuel "subversive" activities/ideas as potential sources of strategic diversification. Tolerance is an indication of the *openness* of a system to the establishment of internal and/or external relationships and practices for the tinkering of local innovations. It is noteworthy that premature application of performance-based measurements impedes experimentation while *informal* sharing of the new possibilities offered by local innovations encourages their pursuit.

By virtue of the fact that a human-based system exists in niches created by other systems' goods and services, the most promising direction in diversifying is to create more niche possibilities for *valued* goods and services (whose providers thereby make a living) which in turn afford niches for yet other goods and services, and so on. When the co-evolution of organizations and environment yields increasing *diversity* of goods and services, economic viability is more likely for all.

The local diversity must not be too dissimilar to the formal system (sanctioned purpose and strategies, routine processes, technologies, etc). There still needs to be a symbiotic relationship between the local system and the higher-level system. Accountability-to-the-whole questions such as: "How might this idea complement the goods or services of a key stakeholder?" or "How might this idea help us create *value* for our group/organization/etc by creating more *value* for our stakeholders?" keep diversity within tolerable limits for all nested systems to remain metastable.

TRANSCENDENCE: Optimizing Evolvability

Each new stage of development has within it the seeds of further change. —Pentti Malaska

The important thing is this: to be able at any moment to sacrifice what we are for what we could become. —Charles duBois

Chaos often breeds life, when order breeds habit. —Henry Adams

In the face of chaos, disorder, randomness, errors, accidents, a metastable system will strive to maintain the Self by gradual variations in structure. Yet, nothing that has ever emerged and managed to persist in a metastable state is exempt from transcendence. *Transcendence* — the radical, discontinuous shifts (destruction) to create a *change of kind* — is the result of incessantly extending beyond the constraints of the past. Incremental, adaptive variations in structure — where advances are extended and extrapolated from the past — provide changes of degree, but not of kind. Transcendence moves beyond the past by evolving the *organization of information* or in other words, by *superseding the Self* (the pattern of organization of information enfolded in the set of interactions that constitutes the essential qualities of a complex adaptive system.)

When doing the "right things" no longer produce intended results and the metastable system becomes unable to meet arising needs, a *breakpoint* — a juncture between death and transformation — is reached. Amid the systemic confusion characteristic of breakpoint, the stabilizing constraints (negative feedback) of metastability weaken and the dynamics of change shift dramatically from variations based on similarity to connection with, and integration of, the strange and different. To yield a *qualitatively* different pattern of order and complexity (a new Self) transcendental change relies on **new ways to organize**

information (via positive feedback — the disorderly, unpredictable amplification of tiny variations from initial conditions) which translates into new rules of interaction which "in-forms" a new pattern of relationships.

In equivalent terms, what is called for at breakpoint is a *re-invention*, a re-emergence of a Self into a new repeatable pattern of success — one capable of metastability under the new conditions. Members of the old Self successfully negotiate the breakpoint crossroad by participating in organizing **different** information into meaningful new arrangements. The emerged Self — the new pattern of organization enfolded in the new network of interdependent connections — adapts to conditions that would traumatize members adhering to the rules of interaction that constituted the previous Self. The previous pattern of organization is not necessarily destroyed in the process. It is usually subsumed by, or re-interpreted in light of, the unifying system's Self which "in-forms" members into a new collective with a different set of interactions.

By reaching out beyond the boundaries of the Self to **realize an untapped potential**, transcendence irreversibly moves onward to ever more evolvability. Through new patterns of information and connection, transcendence supersedes the self-referential rules, the mechanisms, the created forms in search of possibilities, of new forms of expression to evolve further. Transcendence plays with possibilities in contrary directions — possibilities for increasingly diverse forms of self-expression, as well as possibilities for increasingly integrated systems which cohere and sustain this diversity with new wholes, new "selves." Evolvability thus progresses in the direction of **ever more** complex, diverse, specialized, autonomous, interpenetrating connections between system and environment at all levels.

CREATING CONDITIONS

And so long as you have not experienced this:
To die and to grow,
You are but a troubled guest
On the dark earth.   —Goethe

We must become the change we seek in the world. —Mahatma Gandhi

A conceptual understanding of the process of transcendence can inspire the courage necessary to embrace the *destruction* — the **severing of** biological, mental, social, physical, technological, and/or cultural **relationships** — that opens possibilities for the emergence of new wholes within wholes and new integrating wholes that harness this diversity. The "creative destruction" aspect of change in Transcendence opens possibilities to *resolve* paradoxes (whereas change in Metastability *re-arranges* paradoxes.)

Transcendence of a human-based system is predicated on transcendence of some of its members (as little as 2.5% — labeled *innovators*.) Noteworthy however, is that transcendence is not experienced in the same way at the individual versus sociocultural level. At the individual level, transcendence is about resolving contradictions within the totality of who we are. It is about realizing the union of either/or propositions like good/bad, right/wrong, love/hate, health/illness, me/you. At the sociocultural level, it is about paradigm-breaking inventions that spin-off new industries or institutions. Thus, conditions are distinguished into Individual and Sociocultural.

Individual Conditions

In order to arrive at what you do not know,
you must go by way of ignorance.
In order to possess what you do not possess,
you must go by way of dispossession.

In order to arrive at what you are not,
you must go through the way in which you are
not. —*T.S. Eliot*

The relinquishing of the lesser is the
gaining of the greater. Give up all and you
gain all.
—*Sri Nisargatta Maharaj*

At the level of an individual, the passage through a breakpoint — the "nothingness" between breakdown and breakthrough to a new order — feels like annihilation. The transcendence aspect of individual change begins with a breakdown — an "irresoluble bind" where adhering to what worked in the past exacerbates the crisis. The downward spiral of an increasingly painful and frustrating dilemma leaves no alternative but to abandon denials, let down defenses, and face the fear and despair of having nowhere to stand and seeing no possibility of ever finding solid ground.

The "dark night of the soul" journey to the place of breakthrough (the transcendental realization) requires **full surrender to immediate experience without referencing habitual ways of making sense of it** — without ignoring, denouncing, manipulating or attacking evidence contrary to adopted mental models about who we are and how the world works. The trapeze artist is a fitting metaphor to describe the transcendental journey. The trapeze artist has to first let go of the swinging bar she is holding (sever relationships) and fly through the air without anything to hold onto (experience the loss and chaos of no longer knowing her place in the scheme of things) before she can grab hold of the next bar (the next breakthrough realization.)

According to quantum physics, we create our reality (collapse the wave of probabilities into an actualized state) by how we choose to *perceive and interact* with everything, everyone, every event. Since which aspect of the "becoming*"* wave collapses into "being" reality is largely determined by what

the observer *expects* to observe, <u>the key</u> to "new ways to organize information" <u>lies in a perceptual shift</u>. In other words, collapsing a different aspect of the wave of probabilities depends on accepting emotionally (containing anxiety) that the "reality" filtered by the Self is inherently incomplete and then waiting — *without particular expectations* — for a new awareness to emerge.

The realization that resolves a paradox — an irresoluble bind — can be prompted by outside intervention or be glimpsed via imagination, intuition, and/or dreams. This breakthrough (insight) typically brings on a period of disorientation as the Self — the core beliefs and assumptions that create order and meaning out of the complex reality — becomes re-interpreted, pushing past the bonds of the past (good judgement) to supersede the paradox. The new, integrating wholeness is noticed by others as greater discernment or wisdom. Embracing the relativity of conflicting perspectives abates hasty "good judgement" and lets each situation speak for itself.

<u>Sociocultural Conditions</u>

The seeds of failure are often contained in the fruits of success. —*David Hurst*

At breakpoint, the rule change is so sharp that continuing to use the old rules not only doesn't work, it erects barriers to success.
—*George Land*

What makes reform so difficult is that we try to achieve it with methods springing from the very same belief system that we intend to reform.
—*Peter Block*

The very strength of metastable organizations — the ability to maintain the status quo — constrains their capacity to respond appropriately in a turbulent environment demanding radical, transcendental change. In a crisis, the

natural reaction is to intensify the tried-and-true, traditional methods and solutions. When answers from the past only temporarily, if at all, counter the buffeting from the environment, survival typically takes the route of downsizing the organization. The ensuing destruction is not "creative destruction", however. Unlike fire which opens up patches within a mature forest, downsizing does not create the necessary conditions for new elements to enter the situation, for new connections to be made, for new processes to operate.

In deeply troubled times, *assignment of meaning* to events becomes the central predicament. It is no longer a question of problem solving but of problem *finding*. By making sense of equivocal information, it gradually becomes apparent that the key competitive advantages have become the root of the harmful constraints binding the organization. This realization calls for a *re-invention* of the organization — a transformation of the relationships that determine its identity (the Self) and behavior patterns.

The creative destruction of transcendence targets the quintessence of the organization: *how members think and interact.* While conditions described in Emergence invite all members to revisit their shared values and beliefs and to experiment with new behaviors, transcendence additionally requires conditions for a few inventors to be totally dedicated to generating the new formula that will optimize evolvability, that will "reach beyond the Self to realize an untapped potential."

Unlike innovation (doing things differently) which keeps a well-established organization metastable, invention (doing different things) doesn't mix with day-to-day operations. Because inventing is a "noisy" process with no detectable pattern or relevance for some undeterminable period of time, inventors need to be at arms length — free from control, direction, and remonstrance for lack of

productivity — from the formal system but linked via **informal** information sharing across all levels of the organization.

A "transcending*"* inventor is one who:

- has the courage to break with the past — to let go of sanctioned reality;
- tolerates high levels of anxiety, absurdity, unknown, and others' misgivings;
- manipulates an "either-or" situation into a "both-and" condition;
- combines unrelated things (opposites even) in useful ways; and
- values imagination, intuition, compelling dreams as ways to sense what wants to "become" in the manifest world.

And like the bacteria who two billion years ago invented a metabolic system that required the very substance that had been deadly poison (oxygen,) inventors need to explore questions such as: "How can we take what feels like a threat and alter its role into an advantage?"; "What would it take to put the formal system out of business?"; "What strange or surprising developments out there beckon us on to a different future?"

Although the typical objective of the formal system is to germinate the "seed of renewal" internally, in practice the foreignness of the invention triggers the organization's "immune system," intensifying the usual negative feedback controls (this is why the airplane industry was not pursued by railroads.) Because a "transcending" invention — a ground-breaking new pattern of information and connection that better satisfies emerging needs — challenges the common sense of the "establishment," it is best when the sponsoring organization supports the invention as a stand-alone start-up. Eventually the invention reforms traditional values and practices into a distinct industry or institution or subculture. Unlike the "phoenix's death and rebirth into flames" experience of transcendence at the individual level, a metastable human-based

system is superseded by <u>losing dominance</u> as the prevailing way of satisfying needs.

Non-Conclusion

To live in this world you must do three things:
to love what is mortal,
to hold it against your bones knowing your life
*   depends upon it,*
and when the time comes to let it go,
let it go.   —Mary Oliver

It is not the answer that enlightens but the question. —Eugène Ionesco

Typically, at the end of a written piece the author pulls all the strings of her thesis to a fine point and renders a conclusion. I will not oblige because, as the science of our times submits, an answer is a *temporary* event specific to a context, is a *particular* sense-making developed through the ongoing interaction of participants and circumstances.

In accordance with the *Spawning Information* aspect of Emergence, by not ending with a neat and tidy conclusion I hope to create a condition for the ideas advanced in this synthesis to continue to self-organize in the minds, hearts, and lives of readers. In this spirit of inquiry, I invite the readers to live into answers to my compelling "questions-that-matter":

- To what extent does the Game of Change resonate with human experience?
- To what extent does the Game of Change — with its understanding of the natural cycle of creation, maturation and destruction/transformation that all complex adaptive systems must undergo — assist in mastering change-ability?
- To what extent does the Game of Change describe the conditions which seduce us to CHOOSE LIFE actively, fully, everyday?

On the journey from which the Game of Change emerged, I have lived into one answer: the self-organizing property of information "guarantees" that <u>knowledge</u> — the organization of accumulated experience into meaningful structures of thought — <u>will never be enough</u>. "Static" knowledge of the fundamental patterns and dynamics underpinning the spiraling cycle of change needs to be complemented with the **playing of the game** — the "dynamic" wisdom to continually tear at the illusions of what we think we know, and to continually live with what we do not know, immersed in the vastness of the Mystery.

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