



Mindfulness and orgmindfulness are the  
fundamental attributes for achieving greater  
organizational mental cohesion

# Complexity-Intelligence Strategy

*A New Paradigmatic Shift*

**Thow Yick Liang**



World Scientific

# Complexity-Intelligence Strategy

## A New Paradigmatic Shift

"In these times of accelerated change, disruptive innovation, organic view of economic and social systems, and paradigmatic shifts, Professor Liang has completed his magnum opus on complexity of the emerging world. Humans are increasingly the creators of their own environment, and their socio-cultural evolution and adaptability are being challenged. For the first time in history, succeeding generations are facing separate, non-intersecting worlds. Consequently, political, educational, entrepreneurial and economic institutions are being challenged, while many states do not show requisite adaptability, and their interventions are designed to hold back evolution and artificially maintain status quo, and thus stunt the growth of human intelligence. Such virtually global lack of understanding adaptability and ignorance about new challenges and opportunities could prove fatal to many societies and economies. Human evolutionary changes are no longer slow, but rapidly accelerating. Treating human institutions as man-made mechanisms or machines, rather than self-producing autopoietic organisms, has become a paradigmatic burden. Humans do better understand machines they have themselves constructed, rather than the natural and spontaneous creations of evolution. That provides the poorest justification for sticking to the machine of the times long past. Professor Liang provides much needed concepts towards the new thinking."

*Founding Editor in Chief, Human Systems Management*

"In this book, Liang expands the prevalent Newtonian mindset focusing on order, linearity, determinism, and predictability to a complexity mindset that recognizes the modern far-from-equilibrium realities of human intelligence, growing networks, continuous tension-induced change, self-organization, and consequent emergent new kinds of order and nonlinearities that result in complex adaptive dynamics. With the rapid changes, the transformation in leadership and governance thinking and attributes introduced by Liang is a critical necessity for all competitive human organizations."

**Professor Bill McKelvey**

*Professor Emeritus of Strategic Organizing and Complexity Science, UCLA*

"Any academic, researcher or organization leader who would like to acquire deep knowledge about complexity-intelligence strategy to develop intelligent organizations should read this book. It shows the importance of adopting the complexity perspective and points the direction for the future evolution of organizations. It provides valuable insights into both the theory and practice of leadership in leading intelligent organizations of the future."

**Professor Ng Pak Tee**

*Associate Dean, Leadership Learning, National Institute of Education, NTU*

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**COMPLEXITY-INTELLIGENCE STRATEGY**

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# **Complexity-Intelligence Strategy**

A New Paradigmatic Shift



*Dedicated to*

Char Hoon

Zhen Ning (Justin)

Wei Ning (Nicole)





Organizing around individual intelligence/consciousness, and nurturing intense collective intelligence/org-consciousness is the new intelligence paradigmatic shift that drives a redefined human complex adaptive, self-organizing, and more sustaining dynamic that is greatly needed by all competitive organizations in the present rapidly changing, knowledge-intensive, and highly interconnected and interdependent environment — the surfacing of a new niche, the intelligence advantage.



## Preface

The Newtonian mindset (order, linearity, determinism and predictability) has dominated the entire human world for more than three centuries. It has provided the knowledge/theories and conceptual foundation (including deterministic laws, mechanistic thinking, Laplace belief, design paradigm, Cartesian belief, reductionist hypothesis/fundamentalism, deliberate planning and mapping techniques, and certainty) that supported the industrial revolution, and operational control (exploiting hierarchical/bureaucratic leadership and governance, deliberate planning and strategy, transformational leadership, regularity, functional cohesion, static equilibrium and forecasting) of all organizations (corporations, communities, nations and regional/global institutions) in humanity. However, over the last few decades, constraints and incoherency are emerging due to new accelerants and elevating complexity density. The new situation and dynamics, and the multi-dimensional changes require a fresh thinking and deeper comprehension that is beyond the boundaries of the exact sciences. As the continuity of human existence requires a new global order to be established (nurtured and emerged), a paradigmatic shift is essential.

This book is an attempt to provide the foundation for nurturing the intelligence mindset (encompassing the complexity mindset and Newtonian mindset selectively) that is critical in the present rapidly changing, high interconnectivity and interdependency, and knowledge-intensive environment, in particular, with the more frequent appearance of new unknowns and surprises. Fundamentally, the intelligence mindset and its paradigmatic shift encompasses intelligence/consciousness-centricity,

complexity-centricity, network-centricity and stability-centricity, as well as the constructionist thinking as its foundation pillars leading to a fresh intriguing pursuit (constructionist effect  $\Leftrightarrow$  innovation and creativity) in the human world. This transformation in thinking and paradigm is inevitable as additional profound changes in humanity, including modified principles, values, expectations and perception (perceived 'rights' and other construal aspects) of human agents; nonlinear organizational relational friction and dynamics; as well as in-complete phase space are greatly redefining the attributes of human interdependency, leadership, governance, strategy, management and operations. The conceptual foundation of this new thinking has been conceived as the intelligent organization theory, and the theory of relativistic complexity.

In the visible world, intelligence and stability-centricity are mutually correlated. The formation of the physical matter world and biological world is fundamentally determined by this highly significant attribute of stability-centricity. This attribute allows a 'small' segment of the Universe to reverse its universal expanding dynamic. It is the presence of proto-intelligence that initiated the formation of physical structures — physical self-organization and localized (atomic/subatomic) order. More directly, the inference is that it is the proto-intelligence embedded in the physical matter world that drives its own physical stability-centric dynamic — towards more and more robust order/structure. Atoms that are stable do not react. While, atoms that are not stable combined to form more complex molecules that are stable. These stability-seeking processes continue and increase in complexity, and at a vital threshold life emerges. This is a constructionist phenomenon as a new attribute, life and its associated consciousness (awareness, self-awareness) that is not present at the lower level (physical matter world) emerges. Concurrently, the astonishing new strengths of biological stability-centricity also surface.

Biological stability (associated with the evolution of genes, chromosomes, cells, organs, organisms, and more complex species with the trait of independency) is much more sophisticated relative to physical stability — also vastly due to the emergent of new dimensions at the macro level (locomotion, audio space, visual space and mental capacity). A biological organism (from single cell to trillion cells) that learns, adapts and evolves to the changing environment is a localized order that is created by intelligence

that also drives its autopoietic processes. The intrinsic intelligence that sustains biological stability is the basic life-intelligence, and it is from the latter that consciousness emerges. In this respect, the Universe is conscious. Thus, the biological world (Gaia and its ecosystems) encompasses a space of consciousness that greatly redefines its dynamics. This new dimension also creates a new intangible world that is totally different from physical matter (alone). The primary mental functions of awareness (at least responding to the changing environment), and self-awareness (recognizing the existence of the 'self') emerge. At the peak of this evolution process are human beings (*Homo sapiens sapiens*), each encompasses a complex thinking system. Primarily, the unique capacity of the human thinking systems is associated with the relatively 'advanced' development of the human cerebral cortex.

Apparently, the consciousness of different species in the global ecosystem is highly diversified. The human thinking systems (complex neural networks) are the most intense intelligence/consciousness sources on this planet. The intensity of consciousness is closely associated with the intensity of intelligence source from which it emerges. For more 'intense' intelligence, the presence of the brain (a collection or network of neurons) is a pre-requisite. Human brains are each a complex neural network (an intense integrated network of networks) with approximately a trillion neurons. These intense and nonlinear intelligence/consciousness sources each projects a complex abstract mind encompassing a cognitive space, (subjective) knowledge, and possessing the unique capability of utilizing character sets and physical symbols systems, that leads to the emergent of sophisticated written languages (a phenomenon unknown to other biological species). No other species in Gaia has ever created a written language or exploited technologies (advanced knowledge creation).

In addition, a new consciousness function, namely mindfulness (core of the self-awareness function — an inwards focusing capability) emerges from human consciousness. It enables a human being to observe and control the mind. With the presence of this additional capability (the recognition of 'I'), human consciousness is significantly beyond that of all other biological species. Therefore, human stability-centricity (associated with self-centricity,  $\alpha$ -state, self-powered capacity, intrinsic leadership capacity and independency) is significantly different, encompassing an integrated physical, biological and mental space. In particular, the presence of

the mental space redefined human interdependency (versus independency) and existence. Therefore, current leaders must recognize that better management, ambidexterity, social consensus and conformity, high relational capacity and integration of the human thinking systems (appropriate intelligence-intelligence linkages) in an organization is a critical requirement associated with its success — a strategic path towards new competitiveness, resilience and sustainability. In this respect, intelligence/consciousness-centricity is a significant attribute of intelligent human organizations (the presence of an orgmind), and organizing around intelligence is a new basic strategic approach (rather than around functions or processes) that must be well exploited.

Over the last few decades, swift changes in the human environment have elevated complexity density in an unprecedented manner creating intense new differentials. Apparently, orderliness, linearity, equilibrium, determinism and predictability are not the only characteristics that define the human world. Instead, order and complexity (stasis and turbulence) co-exist inherently, and nonlinearity, in-determinism and limited predictability are vital new attributes that must be better comprehended. The entire humanity and their organizations, including human beings are intrinsic complex adaptive systems (and composite systems). Succinctly, the complexity theory must be better comprehend and effectively exploited, as characteristics such as sensitive dependence on initial conditions, dissipation, nonlinearity, adaptive tension, cascading chain, space of complexity, punctuation point, rugged/fitness landscape, far-from-equilibrium, red queen race, self-organization (self-transcending constructions), self-organizing capability, basin of attraction, attractor' (in-complete) phase space and emergence are all natural characteristics of humanity and all its subsystems. Hence, in the current environment where the human world and its microcosms is continuously changing (gradual and sudden), change is the only attribute that never change. In this respect, complexity theory is also a theory of change.

Fundamentally, complexity has always been around. This attribute is an inherent component of this Universe, as well as our biosphere since the beginning. However, the study of complexity both in the natural sciences, and its extension to humanities (social, economic, political, military, and environmental perspectives) is relatively new (despite the presence of some historical roots). Currently, recognizing and exploiting the



co-existence of order and complexity in humanity and its organizations is not a strategic norm, although, it has been observed that the Newtonian mindset and thinking is exhibiting constraints and disparities because human organizations are nonlinear, open, complex, dissipative and adaptive. Many traditional attributes and concepts are revealing escalating incoherency — indicating that even entrenched norms are not permanent. With the present multi-dimensional and multi-perspective accelerating changes (especially, due to numerous technological advancement and integration, including mobile/social media) and deeper globalization, the human world has ‘shrunk’ (space-time compression), human interdependency has intensified and transformed, spaces of complexity and punctuation points are emerging more frequently (physical and mental) due to higher wider causal chain effect (for instance, the last global financial crisis), and competition has been transformed (higher complexity  $\Leftrightarrow$  higher interdependency).

In the new emerging context, human organizations are manifesting more and stronger properties/characteristics of complex adoptive systems (CAS) and the complex adaptive dynamics (CAD) — their inherent status. The significance of intrinsic complexity in all human systems is becoming highly apparent and cannot be suppressed or ignored. This observation leads to the conceptualization of the complexity-intelligence strategy — the holistic/global strategy of the intelligent organization theory. As absolute order, linearity, determinism and high predictability associated with traditional thinking, leadership, governance, strategy, and management is no longer sufficient, complexity and its associated attributes have to be better explored and exploited. Certain spaces of complexity are new unexplored territories embedded with ‘gold nuggets’, awaiting the right innovative explorers. Hence, towards complexity-centricity is a significant and inevitable inclusion. In this respect, a new primary focal point is recognizing the strengths of human agents (intense intelligence/consciousness sources, organizational assets), and the constraints of human organizations (in-complete phase space due to the presence of unknown unknowns, the states of a preferred attractor may not be totally known) — recognizing the close correlation between intelligence/consciousness and complexity (complexity-intelligence linkages) and introduces a new strategic path.

In this context, the presence’ of intense intelligence/consciousness-centricity and third order stability-centricity in the human world also

renders complexity relativistic. The impact of the human mental space is so intense that 'complexity is in the mind of the beholder', and predictability becomes significantly subjective. In such a situation, the state of relativistic static equilibrium may be beneficial. Certain spaces of complexity appear as spaces of relativistic order with surface patterns becoming more apparent (the presence of a prepared mind). Such spaces must be creatively explored and exploited (elevating exploratory capacity) leading to a more advanced level of intelligence advantage. In this respect, effective self-transcending constructions, higher self-organizing capacity and emergence-intelligence capacity are vital attributes that the new leadership must focus on. In intelligent organizations, the intelligence leadership strategy adopted exploits the significant positive correlation of intelligence/consciousness-centricity and relative complexity, and optimizes the more comprehensive coverage and contributions of the integrated deliberate and emergent strategy. In addition, subjectivity may be a positive attribute.

The holistic exploitation of an integrated deliberate and emergent strategy in human organizations is a new necessity. Concurrently, these are two broad paths that allow human organizations to exploit order and complexity (as indicated by the autopoiesis theory, network theory and power law) more effectively, comprehensively and innovatively. The emergent component emphasizes that strategic planning cannot be totally mapped out, structured and predicted, although, being futuristic is still highly significant. Rather, an emergent path must always be nurtured to encompass and exploit the complex and nonlinear perspective continuously. The emergent component allows a new direction that manages nonlinearity and complexity more constructively to emerge. In particular, nurturing collective intelligence with a high self-organizing capacity and better network integration is vital to all current human organizations, as it supports positive spontaneous processes (that are particularly vital at punctuation points).

Hence, the interconnectivity of intense individual intelligence/consciousness sources, and nurturing high collective intelligence/org-consciousness (higher structural capacity, adaptive capacity, collectiveness capacity, relational capacity, self-organizing capacity, emergence-intelligence capacity and unifying capacity; agent-centricity, network-centricity,