

## THE DNA OF INTELLECTUAL CAPITAL

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This paper will describe the DNA OF INTELLECTUAL CAPITAL based on these key principles: (1) “The two most important words in the 21<sup>st</sup> Century are ‘Ability To’”, the fundamental facility of the skills and competencies systems that are the indispensable currency for knowledge management, participation in idea generation, achievement and competitiveness in the global economy. (2) Wealth is created by converting skills into Intellectual Capital that organizations can use for this participation, achievement and competitiveness.

**KEY DESCRIPTORS: Intellectual Capital DNA. Developing Intellectual Capital, Core Competencies of Intellectual Capital, Ingenuity And Intellectual Capital.**

Intellectual Capital now assumes an emerging role in National Strategy. The call for the development of Intellectual Capital as a goal of national strategy as outlined in the document [A National Strategic Narrative](#) leads to the core question: *How Is Intellectual Capital Developed?*

For Intellectual Capital to be developed, it becomes necessary to identify the underlying skills that promote Intellectual Capital and to design a framework for learning the skills that influence and enhance intellectual capabilities.

This paper presents a DNA framework to address the skills development link of Intellectual Capital.

In this framework, Intellectual Capital is a collective outcome of blended skills that facilitate the two forms of Intellectual Capital described by Thomas A. Stewart in [Intellectual Capital](#) (1997) (1) expertise-e.g. communication, leadership skills, organized knowledge also listed as talents, capabilities, skill and ideas and (2) tools that augment knowledge: e.g. facts, data.

Key questions stressed in the DNA Framework include the following:

1. How is Intellectual Capital related to National and Global competitiveness?
2. How can a DNA model of strategic skills promote the development of Intellectual Capital?
3. What are the core competencies of Intellectual Capital that emphasize what one can do with knowledge and new idea generation?
4. How “Ingenuity”, the central competency of Intellectual Capital, is the critical link of the application of knowledge, ideas, and skills.

Developing the right capabilities or skill sets that emphasize what one can do with knowledge underscores this proposed DNA Model as a road-map for generating the intellectual competence of Intellectual Capital.

### *The DNA Framework For Developing Intellectual Capital*

*A Key Context For Intellectual Capital Is Knowledge Management*, describing that information and knowledge are the thermonuclear competitive weapons for our time. In the 21<sup>st</sup> Century economy, one of ever increasing information intensity, *Intellectual Capital* has an increasing dominant, essential role in national output identified with competitive advantage. Sveiby (1998) describes this key relationship: “A term best

*defined by its use, and therefore it is probably still correct to regard Intellectual Capital (IC) and Knowledge Management (KM) as twins - two branches of the same tree."*

*As a Knowledge Management Perspective, Intellectual Capital Leads To New Thinking About Strategic Skill Development, Using The DNA Of Intellectual Capital.*

From Stewart, (1997) Intellectual Capital, now commonly is defined as a portfolio of the skills and knowledge—information material—, which combines intellect or brainpower with an economic concept of capital. Intellectual Capital also is characterized as collective brainpower which is: knowledge, information, experience. Related to the Intellectual Capital context is the term, Human Capital defined as the capabilities required to provide solutions. Stewart indicates that Intellectual Capital has two forms: (1) expertise- e.g. communication, leadership skills, organized knowledge also listed as talents, capabilities, skills and ideas and (2) tools that augment knowledge: e.g. facts, data. )

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### **1. How Is Intellectual Capital Related To National and Global Competiveness?**

*"It is Tom Stewart who in his June 1991 article Brain Power - How Intellectual Capital Is Becoming America's Most Valuable Asset, brings IC firmly on to the management agenda. He defines IC in his article as: the sum of everything everybody in your company knows that gives you a competitive edge in the market place." Sveiby (1988)*

*A dominant theme found in Intellectual Capital: Mind Over Matter: Why Intellectual Capital Is The Chief Source Of Wealth (Baker, 2008) is that Wealth is created by converting skills into Intellectual Capital that organizations can use.*

Baker also adds that in the business of the future competitiveness, effectiveness takes precedence over efficiency.

The dominant context, *Knowledge Management— Is About Connections And Capabilities*. Zack (1999) describes a Knowledge Strategy: "Today, knowledge is considered the most strategically important resource and learning the most strategically important capabilities for business organizations' competitive positions-- dependent on intellectual resources and capabilities. *"Today's knowledge agenda should focus on the linkage between information and knowledge as the competitive weapons for our time."* If we apply knowledge to tasks that are new and different, we call it Innovation. (Peter Drucker)

Another key contextual theme connects *The Need For A Partnership Between Strategic National And Global Environments And Education*. New voices providing conceptual frameworks for a new partnership include: The National Strategic Narrative (2011) with its emphasis on Intellectual Capital stresses that positive competitive skills are a foundation for national success in global systems and economies.

Stewart (2001) uses the term KNOWLEDGE ASSETS, which emphasize how knowledge matters so much to economies and companies. *Intellectual Capital, then are the abilities/skills of the knowledge context that transforms and makes ideas more valuable.*

Stewart's concepts of knowledge assets directly influence how to develop Intellectual Capital. *The following reflect criteria for developing an Intellectual Capital skills model from a point of view of the knowledge context of INTELLECTUAL CAPITAL:*

- Soft assets include concepts such as skills, capabilities, cultures, loyalty, etc.
  - This readiness is more commonly known as core competency in business texts and it is the chief source of competitive advantage for companies. The Intellectual Capital of a firm is the sum total of its Human Capital, Structural Capital and Relational Capital. These assets form a source of distinct competitive advantage and distinguish the performance of one firm from the other. Having control on such assets enables effective internal governance on the one hand and succinct external communications on the other. **Hence it makes sense for firms to measure, monitor and report their Intellectual Capital.**
  - There is a distinction between data and information. They are smaller than knowledge.
  - Knowledge, which involves expertise, is viewed as an organizational *competency*.
  - ***Ideas are valuable in intellectual capital.***
  - Author Thomas Homer-Dixon (2000) describes The Ingenuity Gap as the space between problems that arise and our abilities to solve them. He describes that in a given economy, the flow of ideas leading to useful technologies is a direct result of investment in human capital.
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## **2. How Can A DNA Model Of Strategic Skills Promote The Development Of Intellectual Capital? The Intellectual Capital DNA System: What Is New Here?**

*We Live In A Human Capital Time.* The relationship between Intellectual Capital and the Human Capital of organizations links the knowledge and competencies residing with a company's employees, *where performance is dependent on skills that work together to produce. Human capital then is the capabilities or skills required to provide solutions.*

*A core theme is that Knowledge expertise of Intellectual Capital can be converted Into Profits. Wealth Is Created By Human Capital, Possibilities Waiting To Be Discovered By Imagination, Ingenuity and Creativity, Manifested by Intellectual Capital. Baker (2008)*

People actively using "Intellectual Capital" in their work seem more active in measuring, auditing and valuing issues and in "capturing" knowledge. Sveiby (1998)

**Conclusion: Intellectual Capital Is Translatable Into Skills Development.** Developing Intellectual Capital is a result of skills development. This framework emphasizes the key goal to develop the competencies that result in Intellectual Capital with a focus on a teachable platform.

## ***Key Concepts Of THE DNA OF Intellectual Capital For An Educational Model***

*A Framework For Developing Intellectual Capital.* What does a framework for developing Intellectual Capital include? The goal is to develop directly the Intellectual Capital capability and its supporting skills. Intellectual Capital then is the desired potentiality, while the newly defined Super-Skill of Ingenuity is the core operating skill demonstrating that potentiality.

### A Knowledge Building Pedagogy- Key Concepts

- Collaborative learning--how to do it recommendations.
- Addressing the contemporary emphasis on knowledge creation and ingenuity.
- New thinking about strategy and skills. This framework values the strategic significance of skills.
- Legitimizing work and its connection to problems. Activities which generate and result in Intellectual Capital, emphasis on fostering teamwork--the role of communities in generating Intellectual Capital include project groups and project teams. (Stewart 1997)
- Emphasis on knowledge of—a need is encountered in action rather than knowledge about- no action suggested by Scardamalia & Bereiter (2006)

Stewart (1997) Connects Intellectual Capital With Strategy, Linking The Theoretical And Operational.

Stewart states that Intellectual Capital begins with strategy. He describes that Intellectual Capital or Knowledge Assets are worthwhile only in the context of strategy, which gives it a purpose or point of view. You must know what you are trying to do with intellectual assets.

To explicate the link between strategy and knowledge, an organization must articulate its strategic intent, Identify the knowledge required to execute its intended strategy, and compare that to its actual knowledge, revealing its strategic knowledge gaps. Stewart describes:

- Don't confuse data with knowledge.
- Intellectual Capital has two forms: (1) expertise e.g.: communication, leadership skills, organized knowledge) (2) tools that augment knowledge: e.g. facts, data.
- Intellectual Capital doesn't exist without a purpose and point of view.
- Separating knowledge from noise can be done only by means of strategy.

OPERATIONALLY, the question is to link task and target, another word for objective. *deBono (1994)*

*How Do We Incorporate Intellectual Capital Into Skills Development Models That Reflect A Point Of View Of Knowledge Assets?*

- Audit: We can measure the total performance and value of Intellectual Capital and conduct an audit of intellectual capital (how to increase it).
- An Intellectual Capital Map will create order out of unformed IC: *Stewart 1997*)
- A Competency Map Closes The Skills Gaps.  
THE Skills needed to succeed are different from ones we are used to.  
Professionals NOW will be measured not by skills testing but by a focus on the tasks they perform.

*Managing A Knowledge Context: How Do We Manage Knowledge?*

*Knowledge Management Deals With The Flow Of Knowledge, Not The Stock Of Knowledge.*

Working With A Knowledge Data Base: **Key concepts include competencies, idea flows.**

*Managing Knowledge: A Map For Developing Intellectual Capital From Stewart*

- *Intellectual Capital*: requires the structuring and packaging of competencies.
  - Describing how the “The structuring and packaging of competencies will ensure the Intellectual Capital remains available to organization.
  - Developing a Knowledge database. Sharing competencies of promising practices, checklists of what went right and wrong.
  - Connecting Idea Flows *and* how people can share their competencies.
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**3. What Are The Core Competencies Of Intellectual Capital That Emphasize What One Can Do With Knowledge? : Our Key Operational Principle Is That Ingenuity Is A Teachable Skill.**

*If Intellectual Capital Is The Framework, What Is The Core Skill To Be Developed? The Skills To Develop Intellectual Capital Are Different From The Ones We Are Used To.*

THE SKILLS PREMIUM INTRODUCES US TO THE PREMISE THAT low skill work does not generate Intellectual Capital - Stewart, (1997) ) *thus* we introduce the **new Skills Category of SUPER-SKILLS**. Homer-Dixon in *The Ingenuity Gap (2000)* stresses the economic value of creativity in the modern economy. Thus, Ingenuity’s role is key in a new Skills-Ecosystem, when in today’s environment, fast-paced and more complex, **our need for Ingenuity rises**, as we must deliver an even greater range of problem solving ideas at an even higher rate.

## What Are The Major Criteria For A New Skills Category Of Super-Skills?

- Skill sets will emphasize what can do with knowledge.
  - Emphasis on capability rather than capacity and the results achieved.
  - Developing the right capabilities. Homer-Dixon (2000) provides some examples of “pattern recognition, inference, and strategic planning. “
  - Developing Core Competencies Of Strategic Importance As Introduced By Stewart (1997) ) “ A Skill Or Talent Must Be Intangible, Or Added Value. It’s Always Described In A Phrase Beginning ‘The Ability To’.”
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### **4. How Ingenuity, the central competency of Intellectual Capital is the critical link of the application of knowledge, ideas and skills?**

*In Knowledge Building, Idea Improvement Is An Explicit Principle. Scardamalia & Bereiter (2006)*

The Value Of Ideas Is The Core Context Of Intellectual Capital And Its Contributing Skills  
Homer-Dixon adds that Ingenuity focuses on the generation and delivery of useful ideas and That Ideas are more durable than Human Capital .

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- INTELLECTUAL CAPITAL requires a useful idea to be creative.
  - Intellectual Capital Becomes An Asset When Some Useful Idea Is Created.
  - Ideas Are The Instructors That Let Us Combine Resources In More Valuable Arrangements.
  - A Focus On The Flow Of Ideas. Use An Idea Chain.
  - How To Speed Up The Flow Of Ideas.
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### **How Can We Use The Super-Skill Of Ingenuity To Solve Problems, Big And Small?**

Areas And Nalebuff (2003) describe some key principles that we have assigned to the Super-Skill of Ingenuity and place these principles in contemporary problem-solving situations. They connect some of the dots for the roles of innovation, the centrality of idea generation and what they call” ROUTINIZING INGENUITY.”

- Knowledge Management is a process of codifying what an organization knows.
- Innovation is a skill that can be taught. The potential for innovation is all around us. The problem is that the sense of innovation as everyday ingenuity gets lost in our high-tech world.
- Asking questions is a different skill from answering them.
- More important than the ideas themselves is how we go about generating and evaluating them.
- A User’s Guide for developing new ideas describes that “It’s one thing to tell people, be creative. It’s quite another to give them a framework for coming up with new ideas.

- “Routinizing Ingenuity: Most original ideas aren’t completely original, but instead are the results of two basic methods for generating ideas: problems in search of solutions and solutions in search of problems.
- Some tools for generating ideas: (1) finding and identifying the problem is often the crucial step (2) observing what is wrong is useful (3) translation and (4) start with a solution and find a problem.

In This Model, The Major Goal Of The Super-Skill Of Ingenuity Is To Promote Ideas For Problem Solving, Relying On An Unbreakable Association Between Competencies Of Critical Thinking And Creativity To Develop The Ingenuity, Key To Intellectual Capital. **Ingenuity Then Possesses Characteristics Of Creativity And Critical Thinking.**

In Knowledge Building, Idea Improvement Is An Explicit Principle, Thus Ingenuity Is A Guiding Knowledge Building Competency, Which Can Be Learned.

***What Are The Key Roles Of Creativity And Critical Thinking In Developing The New Super-Skill Of Ingenuity?***

A New Skills Ecology Places Critical Thinking And Creativity Within Ingenuity, Debunking The Current Emphasis On Critical Thinking As The Master Skill To Be Developed.

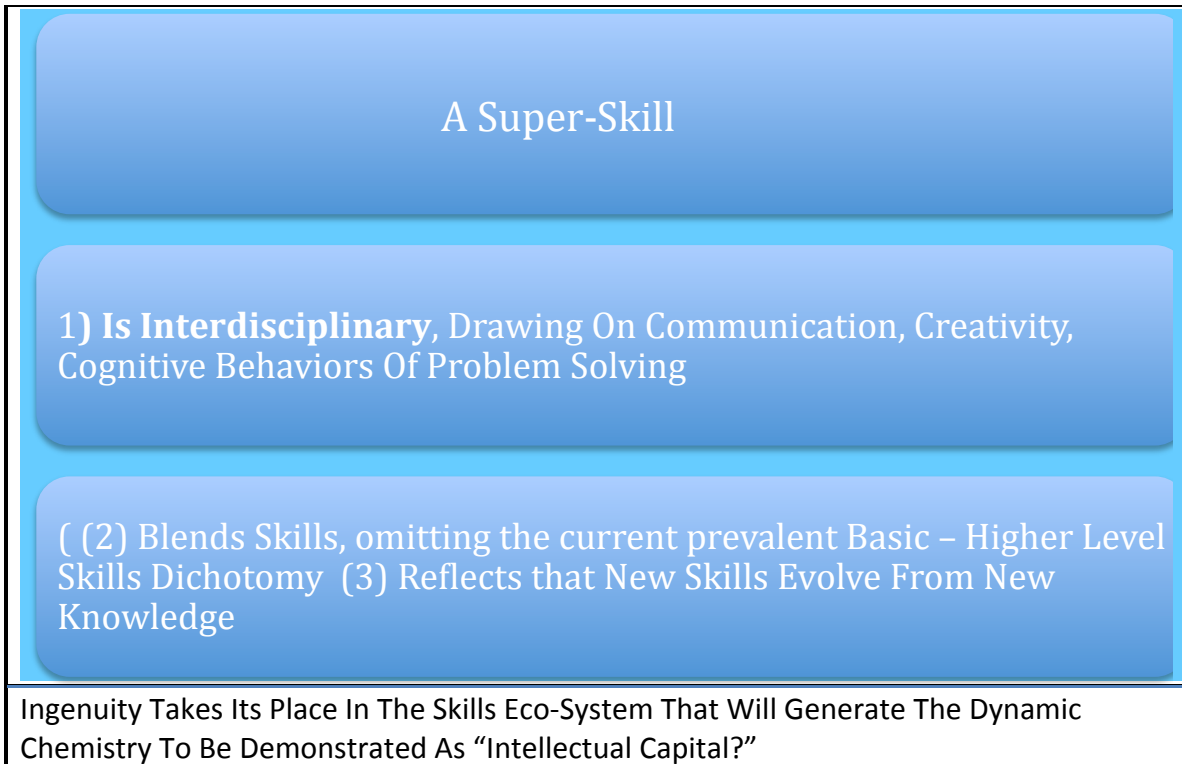
*(Debono, In Lateral Thinking (1990), de Bono links creativity with idea development, both core elements of the proposed Super-Skill, Ingenuity. Creativity exists in the context of ideas and creativity is concerned with the generation of new ideas that can be taught.*

- Reframing creativity as a participatory experience, moving the locus of gravity from individuals to ideas. In other words, individuals are not creative, ideas are creative and there are multiple ways for individuals to participate in creative ideas.

A similar role for innovation as a teachable skill is described 2003 book, WHY NOT? HOW TO USE INGENUITY TO SOLVE PROBLEMS BIG AND SMALL by Ares and Nalebuff, states that innovation is a skill that can be taught.

The Following Charts Provide A Conceptual Framework For Describing How Ingenuity Is Generated From Creativity And Critical Thinking.

The Charts Also Describe How These Values Of The Super-Skill, Including The Blended Basis Of Creativity And Critical Thinking, Are Integrated Into A Goal Of Ingenuity Skills Development-- Forming The Strategic Chemistry Required For Intellectual Capital.

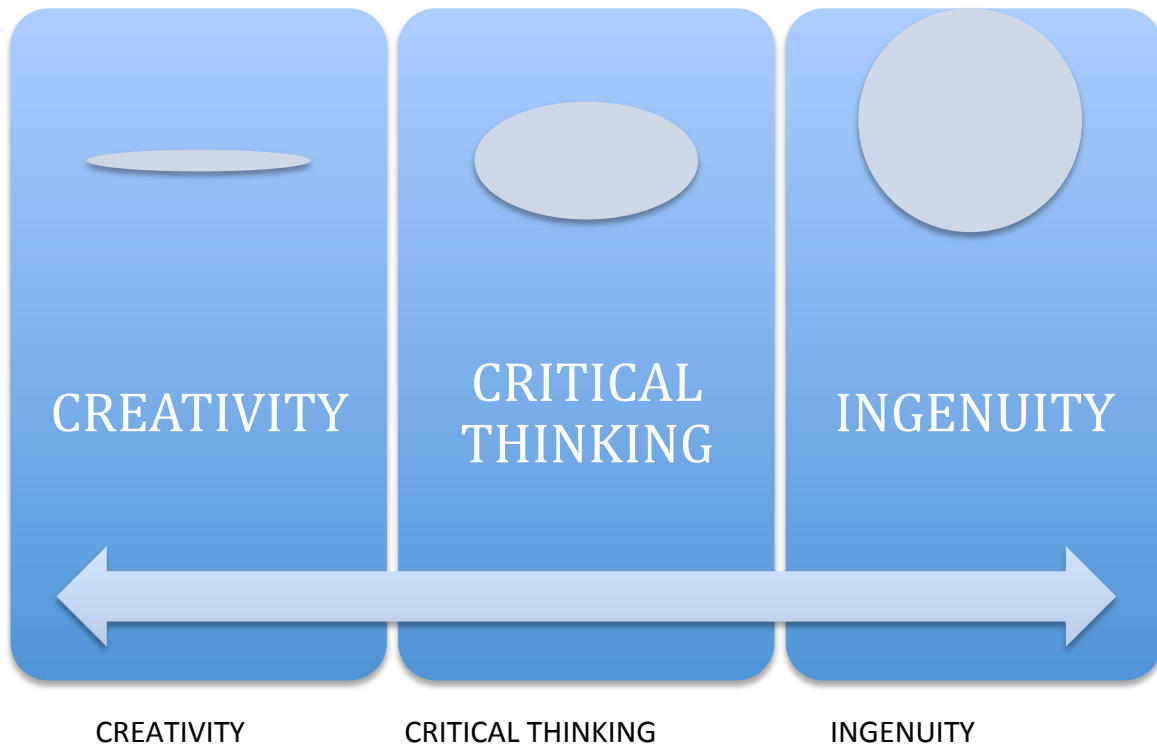


**Figure 1**

This Skills Formation System Describes How Skills Work Together To Foster The Super-Skill Of Ingenuity, Capable Of Generating The Unique And High Productivity To Close The Ingenuity Gap (The *Space Between Problems That Arise And Our Ability To Solve Them*) Here Ingenuity Is Represented By Creativity And Critical Thinking Processes To Result In Problem Solving Capabilities.



Core Context Of Intellectual Capital And Its Key Skill Of Ingenuity: The Value Of Ideas.



Generating A New Idea      Converts Theory To Operational      The Skill To Close Ingenuity Gap  
Begins with a problem and results in solution      **Figure 2**

**CONCLUSION**

Today, economic progress increasingly is difficult to distinguish from the advancement of skills, and in 2016, the nexus between organizational productivity and skills development is a key challenge of Knowledge Management whose goal is to develop knowledge that can be converted to profits.

We describe Intellectual Capital as a core building block of national goals of prosperity and security. We also introduce Ingenuity performing as a new Super-Skills category that generates the dynamic chemistry to be demonstrated as Intellectual Capital.

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