

Ongoing Discussion “Thought Piece”

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ENTERPRISE VALUE CREATION AND COLLABORATION: THINK AND ACT BOLDLY TO DEFEAT “IMMUNE SYSTEM” OF OUR BRAIN

Arnold Goodman, Co-Founding Editor of ASA and Wiley *Journal on Statistical Analysis and Data Mining*

VALUE CREATION AND COLLABORATION

Depending upon the current situations of organizations in an *enterprise*, the enterprise is *solving problems*, *developing products (including software or services)*, *managing projects* and very-likely combinations of them. It can be seen from Figure 1 that all three of those processes are *essentially identical* except for the components in their stages. We explore the creation of *value* for enterprises and the multiplication of this value, or perhaps its maximization, by *collaboration*. Why do these processes need value creation and collaboration? In the 21st Century, many if not most of our enterprise situations are *complex* and/or involve *multiple perspectives*. Developing hardware products is well understood, but developing software and service products or managing their projects is not.

Value creation and collaboration for those processes are also *essentially identical* except for the components in value-creation stages and collaboration success-factors. The *stakeholders* in each process may well include *owners, users, builders, financers and managers*. I have collaborated in creating value for all three processes contained in many different environments *for over 50 years*.

IBM wisely stated in an advertisements to “*Stop selling what you have: start selling what they need*”. Think *beyond narrow aspects* of a situation and satisfy the major needs of stakeholders for more than that situation. We should use our *hands* to achieve usual goals, our *heads* for going farther to create value, and our *hearts* for going beyond such value to multiply it with collaboration.

After the stakeholders in each situation are identified, value creation consists of five *sequential, interactive and integrated* stages:

- *Defining* our stakeholders’ *needs* by advancing from the initial version to an *agreed-upon version* by gentle cross-examination.
- *Specifying* our most-appropriate collection of *resources* to accomplish *goals of the situation* in a cost-quality-time-effective way.
- *Designing* our most-promising *tools* to utilize those resources in accomplishing the goals and *satisfying our stakeholders’ needs*.
- *Building goals* of our situation by employing these tools on those resources and trying to *optimize cost-quality-time relationship*.
- *Creating value* by discovering new stakeholder *insights*, justifying stakeholder *decisions* and/or empowering stakeholder *actions*.

Figure 1 shows essentially-identical process for value creation in solving problems, developing products and managing projects.

VALUE CREATION IN PROBLEMS, PRODUCTS & PROJECTS

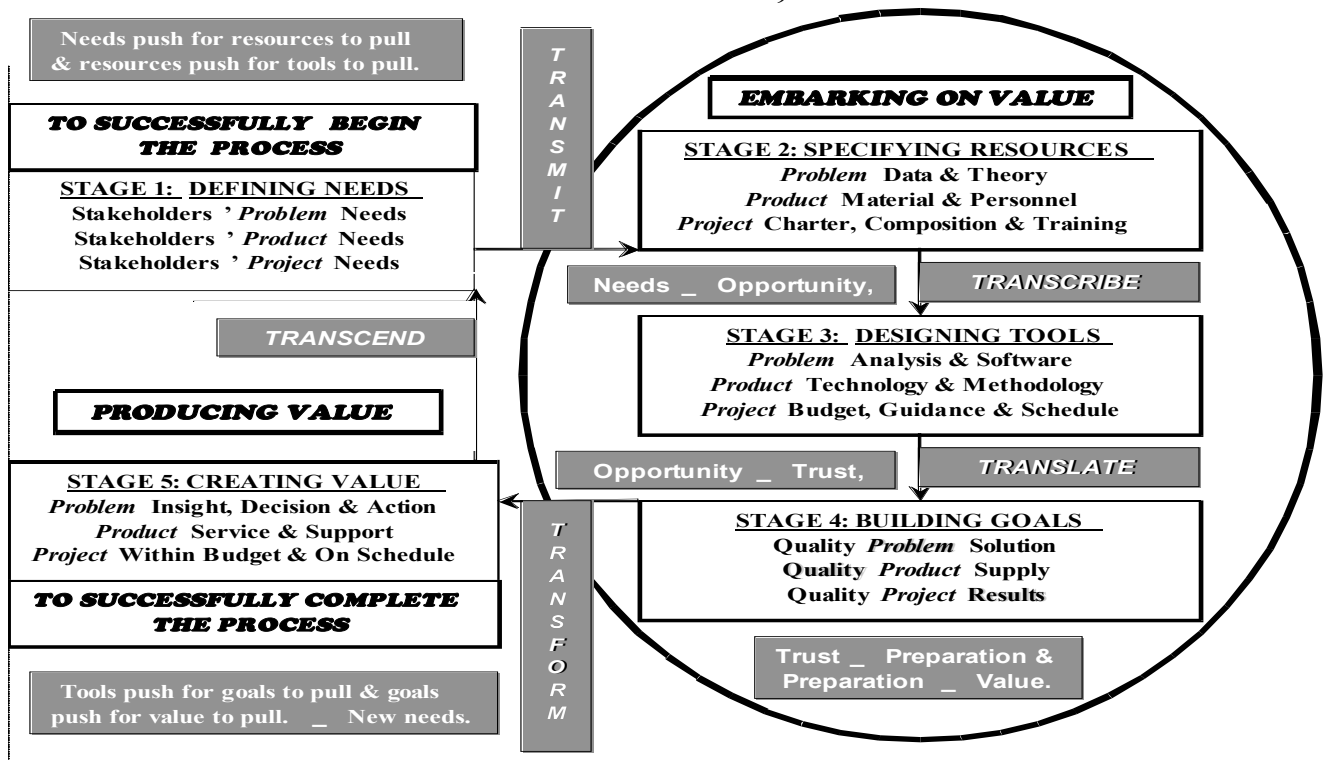


Figure 1. Essentially-Identical Process for Value Creation in Problem Solving, Product Developing and Project Managing

Almost everyone is currently *talking* collaboration, yet almost no one is actually *walking* collaboration. In addition, extremely little is known about: what it is, how it begins, what makes it grow, how to measure it, what makes it succeed, and how to teach it. Until we understand collaboration well, we propose model representations to guide us, starting with collaboration success-factors:

- *Communicating* to strive for a common language of value creation and increase compatibility among our stakeholders (*critical*).
- *Connecting* to strive for a community of bonding relationships among stakeholders and also enhance credibility* among them.
- *Committing* to strive for common goals of accomplishment by stakeholders and then to improve our mutual behavior* (*critical*).
- *Controlling* to strive for value creation and collaboration: agreement, implementation, real evaluation and finally improvement.

* See *The Speed of Trust* by Steven Covey with Rebecca Merrill for an informative and instructive analysis of trust and its growth.

Collaboration should focus and advance orchestration of value creation: to increase value's competitive advantage and encourage synergy among our disciplines, individuals and organizations involved. *Collaboration* will likely be at the heart of performing our increasingly complex and multi-perspective processes for the *next 40 years*, as the *interface* of computing science and statistics has been at its heart for the *last 40 years*. Figure 3 exhibits collaboration in problem solving, product developing and project managing.

Communicating toward a common language is virtually the "*information system*" of collaboration which provides the links among *connecting* toward a *community*, *committing* toward common goals, and *controlling*

toward common agreement. Members of the connecting team need to agree upon an *operational terminology* for communicating that *minimizes jargon* and *clearly defines remaining jargon* so it is sufficiently-well understood. This operational terminology might well spell our difference between *successful* process performance and *failing* process performance. Speak and write with enough clarity to our stakeholders in this operational terminology. Lee Iacocca emphasizes the substantive requirement for communicating well with “*You can have brilliant ideas, but if you can’t get them across (speak to be heard), your ideas won’t get you anywhere (you might as well not bother)*”.

Connecting is the *weaving* of member relationships into our *process team* as well as the *glue* which also bonds those members together into our *cohesive* team. It is characterized by the *extent* of its relationships, *strength* of its attractions, *significance* of its reciprocities, plus the *coordination* and *synergy* of its activities. Connecting is essentially the “*chemistry*” of collaboration, enabling and facilitating our relationships and interactions that enhance not only *communicating*, but also *committing* and *controlling*. The Japanese character for *community* means “*I help you and you help me*” and also applies to *connecting*.

An identical process for collaboration in solving problems, developing products and managing projects is portrayed by Figure 2. Both Figures 1 and 2 have been inspired by the first process or system model of our cell’s DNA-protein-DNA cycle in Figure 3.

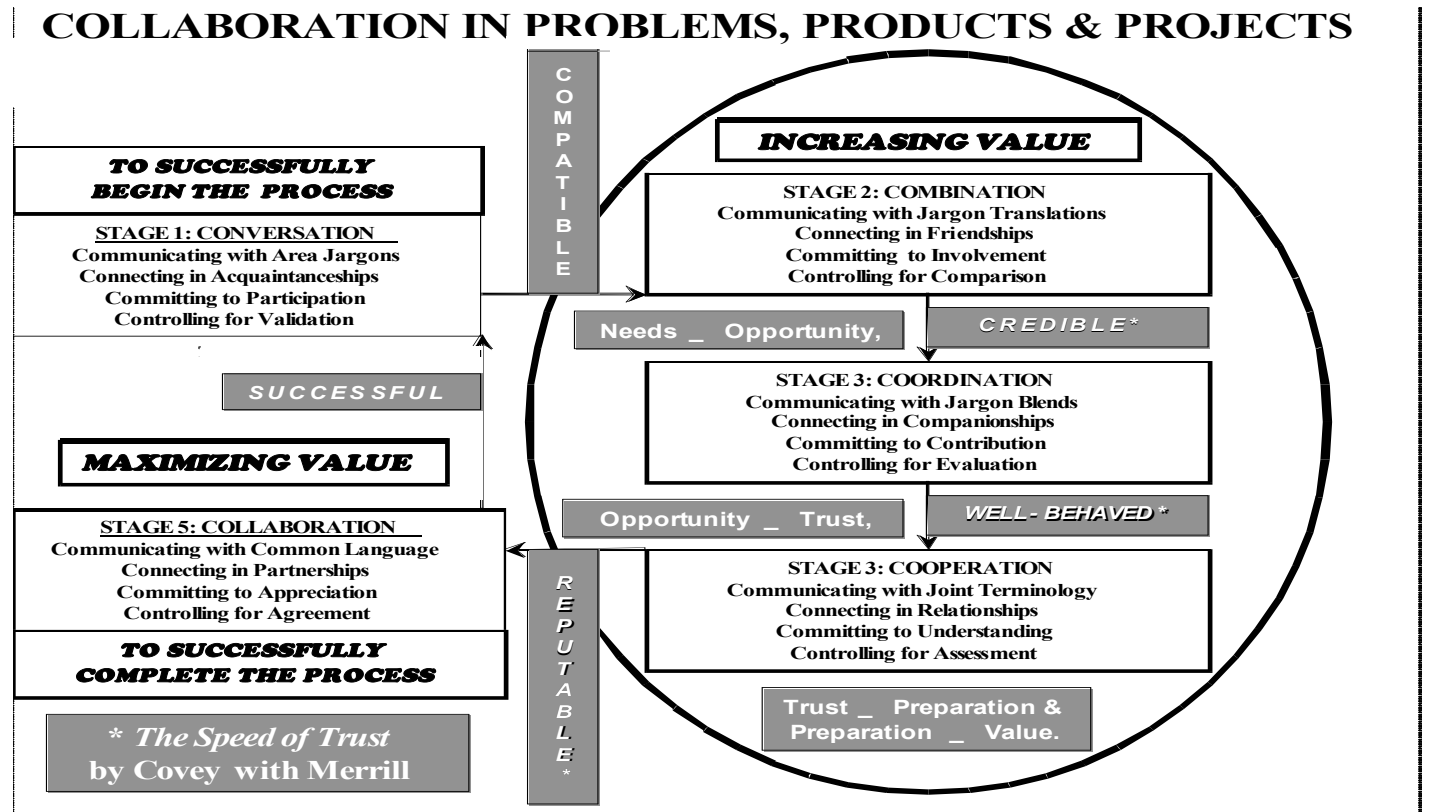


Figure 2. Identical Process for Collaboration in Problem Solving, Product Developing and Project Managing

The “*physics*” of collaboration is effectively committing which supplies our *energy* to start it, continue it, separate it from cooperation, and likely be successful. It *transforms* committing energy and strength into a *force* which enables and empowers collaborative *communicating*, *connecting* and *controlling*. This physics ought to motivate team members to *self-educate* themselves in appropriate disciplines. Since it is not sufficient for members to *peer* into those disciplines from the *outside* (as happens all too frequently in theory-oriented

individuals), they should *actively experience* them from the *inside* by *actively attending* recommended presentations and workshops, as well as becoming sufficiently familiar with the suggested literature.

Comparing process performance to our stakeholders' needs while driving toward an improvement of this performance, *controlling* is literally the "*biology*" of collaboration. It is characterized by our progress from *blind acceptance* of process performance without evaluation, through *internal evaluation* of it within our analysis and data, to *independent external evaluation* of it in our stakeholders' environment and according to their values. Technology and methodology merely produce *dreamy castles in the air*, until their results are precisely *adjusted for the effects* of our dreamy castle and accurately *evaluated against independent reality on the ground*. Instead of trusting the technology and methodology, it is far wiser for us to utilize Ronald Regan's "*Trust but verify*". Otherwise, there is *no insurance* against our risk of the harsh penalties which *uncertainty may dispense* (think financial derivatives)

Paul Silverman directed first U. S. genome laboratory and *testified* to fund U. S. Human Genome Project. By 2004, he envisioned improving its central dogma that *genes determine proteins* and recruited me to collaborate in his vision: to develop a new model of the *cell's protein cycle* and explore it for *uncertainty*. This (final) vision is *confirmed* by 3 of the 4 Biology Questions in *Science's 125th Anniversary Issue* (Why so few human genes? What determines species diversity? How will big pictures emerge from a sea of biology data?), and *2006 Nobel Prizes in Chemistry* (*Proteins* that turn genes on) and *Medicine* (*RNA snippets* that silence genes). The first process or system model of our cell's DNA-protein-DNA cycle that was envisioned by Silverman is presented by Figure 3.

How do we control extremely complex processes and systems which straddle numerous disciplines or perspectives? We need to generate and analyze process and system experimental data, process and system simulation data or both. Since the real objective of control is to then improve and hopefully optimize the processes and systems, Figure 4. contains my "double-diamond" structure to improve and hopefully optimize them through analyzing their experimental data versus their simulation data. Such analyses made excellent sense when computer simulation was introduced in the middle 1960s, and they make even better sense currently, with our extremely complex processes and systems which straddle numerous disciplines or perspectives of the 21st Century.

COLLABORATION IN VALUE CREATION

How do we integrate *collaboration* into *value creation* to multiply and perhaps maximize the *value* created? Each *collaboration success-factor* has definitive *contributions* to improve every *value-creation stage* of. For example, controlling contributes *tests* which become less subjective and more objective or quantitative: sniff-tests, sanity-tests, reality-tests, practicality-tests and worth-tests. *Needs* push for *opportunity* to pull, *opportunity* pushes for *trust* to pull, *trust* pushes for *preparation* to pull, and *preparation* pushes for *value* to pull. Overview models for this *integration of collaboration* and its *dream-team* are in Checklists (page 8) 1 and 2.

Spanish Architect Antoni Gaudi said that “Nothing is invented, for it is written in Nature first ”.

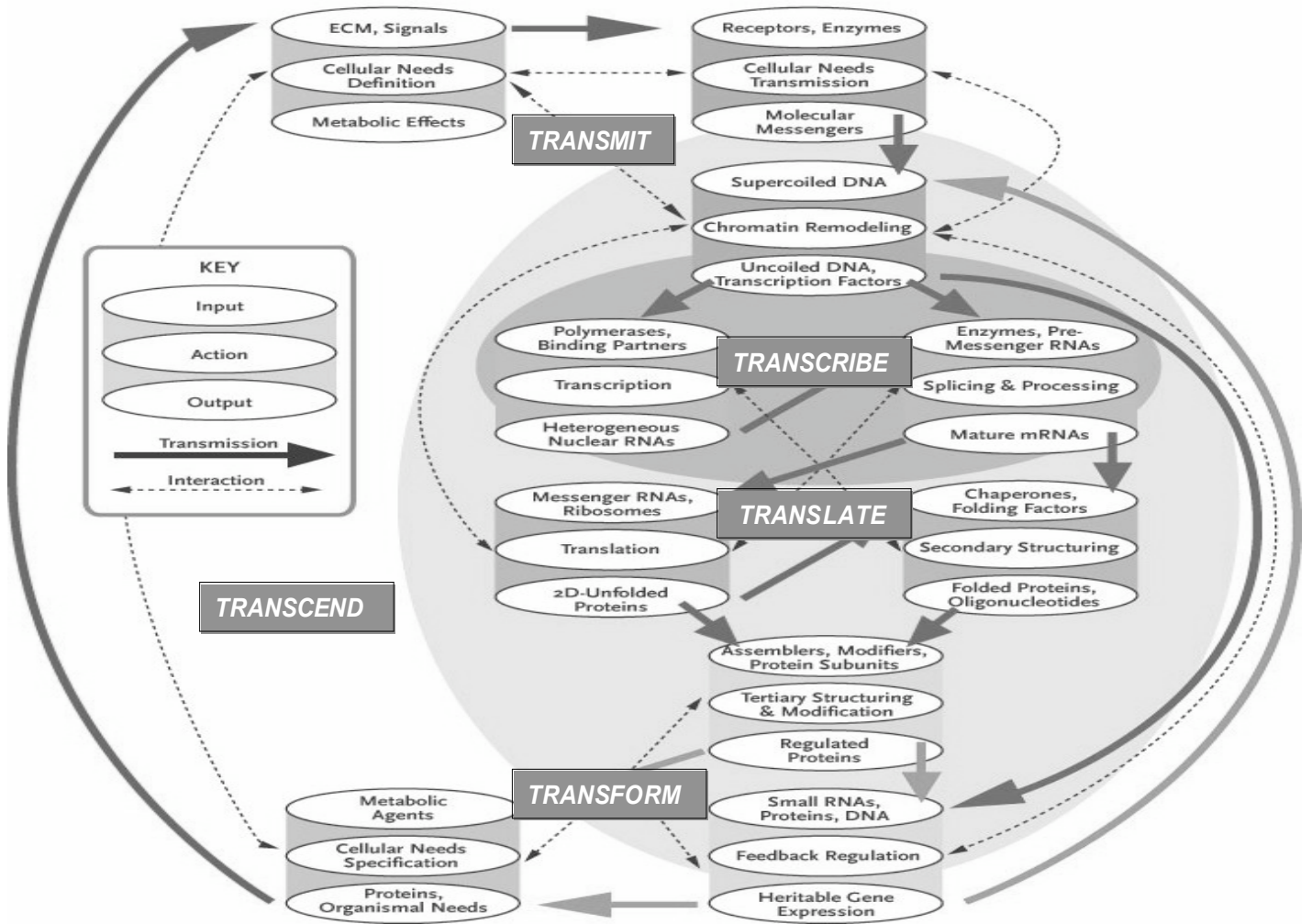
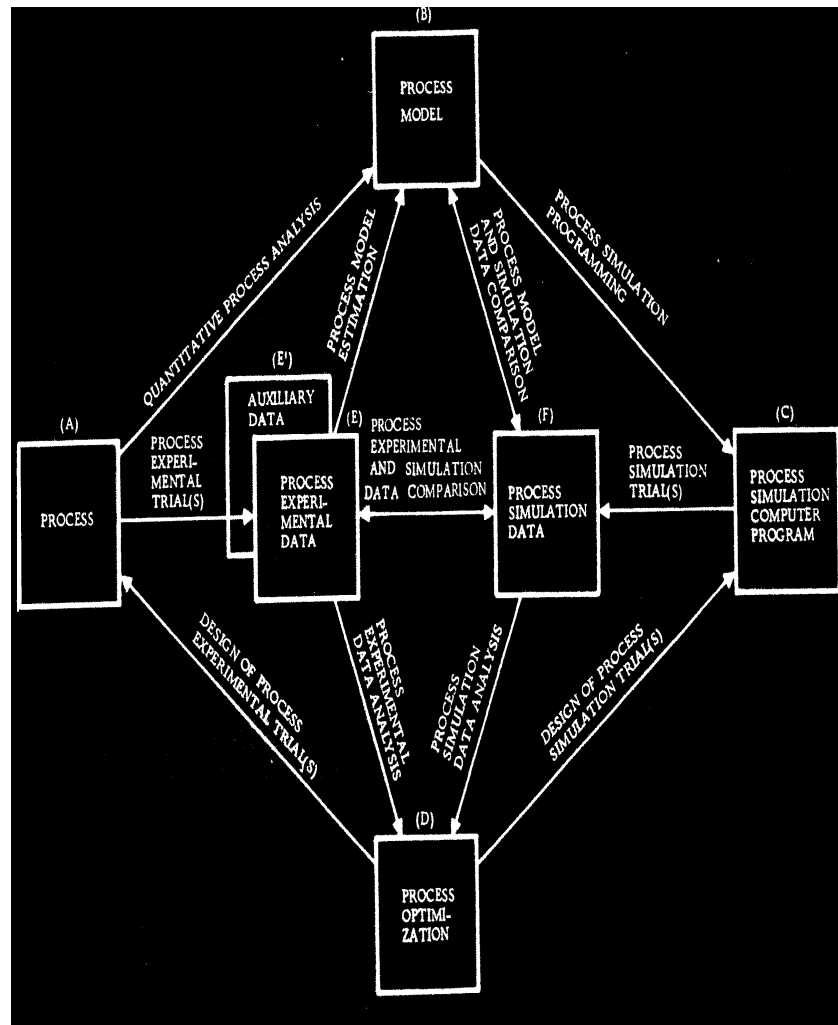


Figure 3. 1st Process or System Model of DNA-Protein-DNA Cycle in Goodman, Belato & Khidr, *The Scientist* 19:12, 20-21

PROCESS OPTIMIZATION BY EXPERIMENTAL VS. SIMULATION DATA



“Data Analysis for Users ”, *Proceedings of 1972 Fall Computer Conference* , Pages 1166-1169

Figure 4. Process Improvement and Hopefully Optimization though Analyzing Experimental versus Simulation Data

COLLABORATION IN VALUE CREATION

VALUE CREATION _ COLLABORATION _	DEFINING NEEDS	DESIGNING TOOLS	CREATING VALUE
COMMUNICATING TO ENABLE/FACILITATE BEST INTERCHANGE OF INFORMATION	BLEND DISTINCT STAKEHOLDER JARGONS INTO OWN LANGUAGE	EXPLAIN BOTH THE ANALYSIS & ITS SOFTWARE TO EXPERT/“NOVICE”	DESCRIBE IMPACT OF INSIGHTS, DECISIONS & ACTIONS TO ALL
CONNECTING TO INTENSIFY BONDING OF RELATIONSHIPS	ALWAYS THINK, SPEAK & ACT AS A STA KEHOLDER	DEVELOP VERY BEST ANALYSIS, SOFTWARE & TEST	UNCOVER INSIGHT, DECISIONS & NEEDED ACTIONS
COMMITTING TO BECOME THE MOST PRODUCTIVE AS A STAKEHOLDER	SUBMERGE OWN AGENDA & GOALS INTO THOSE OF STAKEHOLDERS	LISTEN & LEARN FROM OTHERS & USE EXPERTISE TO EDUCATE THEM	BE CREATIVE & PRACTICAL FOR BUSINESS, SCIENCE & GOVERNMENT
CONTROLLING_TO IMPROVE BOTH VALUE CREATION & COLLABORATION	SNIFF -TEST NEED FEASIBILITY & COLLABORATION PERFORMANCE	REALITY-TEST PROMISE OF TOOL & OLLABORATION QUALITY LEVEL	WORTH-TEST INSIGHT/DECISION/ ACTION IMPACTS & COLLABORATION

Checklist 1. Partial Overview of Integrating Collaboration into Value Creation

IDEAL COLLABORATION TEAM

IDEAL TEAM	NEED	RESOURCE	TOOL	SOLUTION	VALUE
Conversation in Stakeholder Exploration	Owner, User, Builder, Facilitator?	Owner, User, Builder	Owner, User, Builder	Owner, User, Builder	Owner, User, Builder, Facilitator?
Combination of Individual Efforts	Owner, User, Builder, Facilitator, Financer?	Owner, User, Builder, Facilitator?	Owner, User, Builder, Facilitator?	Owner, User, Builder, Facilitator?	Owner, User, Builder, Facilitator, Financer?
Cooperation in Mutual Effort & Objectives	Owner, User, Builder, Facilitator, Financer	Owner, User, Builder, Facilitator, Financer?	Owner, User, Builder, Facilitator, Financer?	Owner, User, Builder, Facilitator, Financer?	Owner, User, Builder, Facilitator, Financer
Collaboration in Joint Effort, Objectives & Behaviors	Owner, User, Builder, Facilitator, Financer, Manager	Owner, User, Builder, Facilitator, Financer, Manager?	Owner, User, Builder, Facilitator, Financer, Manager?	Owner, User, Builder, Facilitator, Financer, Manager?	Owner , User, Builder, Facilitator, Financer, Manager

Checklist 2. Composition of Dream-Team for All Combinations of Value-Creation Stages and Collaboration Success-Factors

WHOLE BRAIN AND BEYOND

Figure 5 combines value creation and collaboration with the “Whole Brain Thinking Model” of Ann Herrmann-Nehdi. It then goes beyond them with our need to ask *appropriate questions* followed by *thinking* and *acting* boldly to defeat the “immune system” of our brain: *bias, dogma, ideology* and *prejudice* which inhibit *fresh and novel* concepts from being considered. Although we behave as though we only need to *think* less with all of our current technology and methodology, we actually need to *think more and better*.

Value Creation & Collaboration plus Herrmann -Nehdi’s “Whole Brain Thinking ” & Beyond

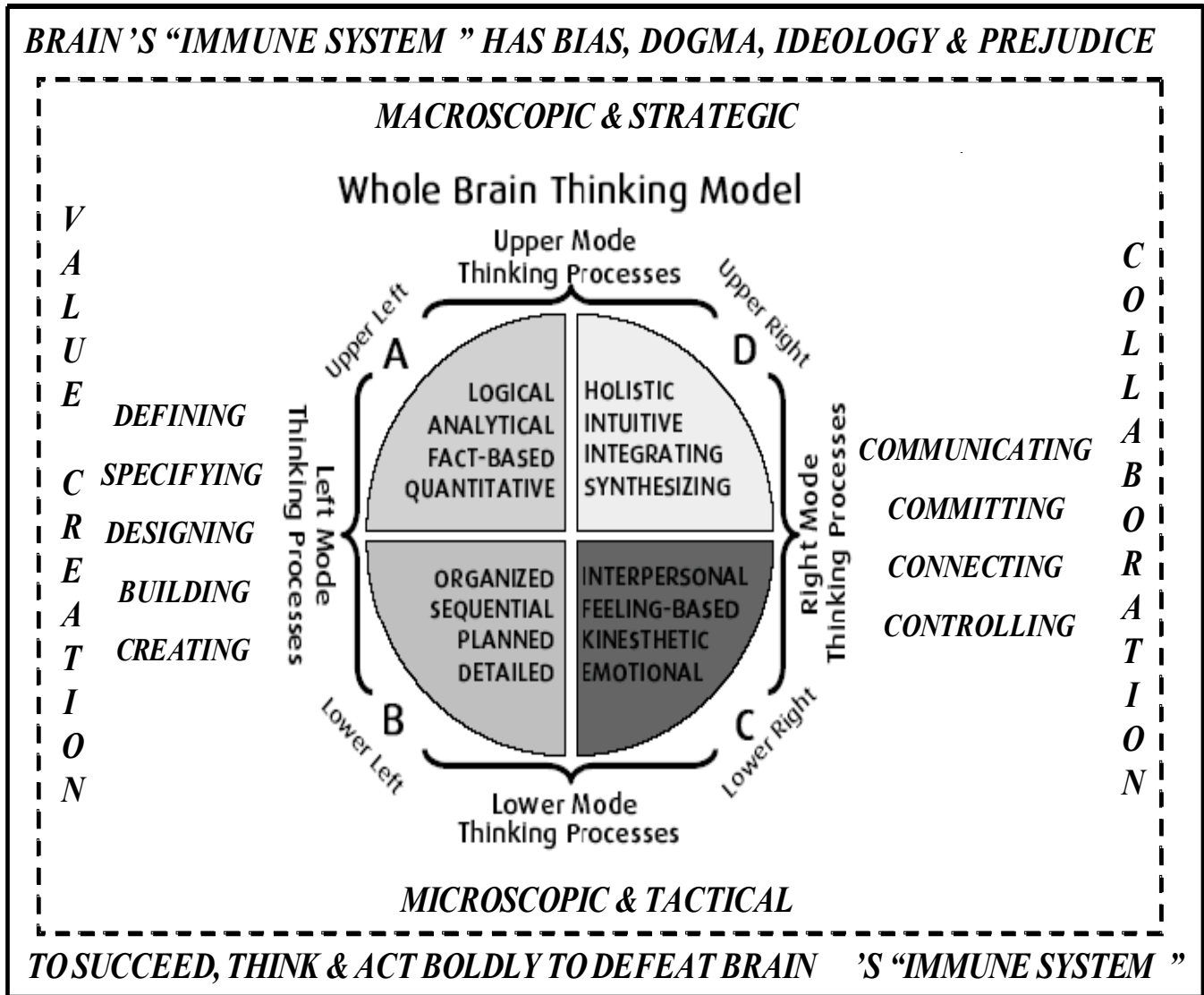


Figure 5. Synthesizing Value Creation and Collaboration with “Whole Brain Thinking Model” and Going Beyond It

Experience in Enterprises & Experiences in Thinking

Arnold Goodman, Co-Founding Editor, ASA-Wiley *Statistical Analysis & Data Mining Journal*

Experience in Enterprises

Power-spectral-density analysis of clear-air turbulence at *NACA* (→*NASA*)

Dominant error-sources of inertial-navigation for its *Autonetics*' inventors

Simulation, info systems & Apollo negotiation at *North American Space*

Senior Staff to *McDonnell-Douglas* Vice President of Information Systems

Management science, IT planning & user computer-cost-allocation at *Arco*

Capacity planning & performance + IT planning & safety at *LA County IT*

Co-Founder of Center for Statistical Consulting (→ Statistics Dept.) at *University of California at Irvine (UCI)*

Except for UCI, always lived in same organization as clients & collaborators

Experiences in Thinking

Bold thinking beyond brain's "immune system": *inside-the-box*, *outside-the-box* & *structural modeling* of complex situations by *checklists* & *scorecards*

Inside-the-box (of cell biology) thinking from *outside the box* (of statistics and systems) includes: 2004- first process or system model of DNA-protein-DNA cycle, exploring uncertainty in Nature's cycles of life & proposing a collaborative means to bridge huge gap between classical & systems biology

Outside-the-box thinking includes: 1962 (was it 1st?) use of mixed model to solve a regression problem where the error variance is unknown & variable, 1965 modeling of information-flow process beyond usual use of histograms, 1967- co-founding of annual symposia on interface of computing science & statistics, 1968 cataloging of consultants' statistical expertise for library use, 1983 generating computer cost-allocation budgets for users to accept/reject, 1988 dollarizing of future computer usage to justify buying new computer, 2000- value creation & collaboration in complex problems/products/projects & 2006- co-founding of ASA-Wiley *Statistical Analysis & Data Mining Journal*

Structural modeling of complex situations includes *checklists* & *scorecards*:

1961 evaluating statistical software, 1973- site selection of ATM & cosmetic studio locations, 1996- evaluating project-managing, 1998- modeling most-significant factors in patient-satisfaction, and 2000- modeling value creation & collaboration plus both their separate growth & their integrated growth