



# UNCOMMON KNOWLEDGE:

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## CREATING NOVEL SOLUTIONS TO INTRACTABLE PROBLEMS

### A PERSPECTIVE ON MULTI-DISCIPLINARY COLLABORATION

#### ABSTRACT

Extraordinary solutions to intractable problems require the coordinated attention of skilled and often highly specialized individuals from multiple backgrounds and organizations, coming together in a collaborative environment. However, new forms of cooperation and collaboration across disciplines and specialty areas that previously worked in isolation from one another present a unique challenge right from the outset: an inability to effectively communicate. A common and agreed-upon language must be developed before the group can collectively attack its problem. A Lexicon provides the means.

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## CREATING NOVEL SOLUTIONS TO INTRACTABLE PROBLEMS

### A PERSPECTIVE ON MULTI-DISCIPLINARY COLLABORATION

#### ABSTRACT

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From hunting mastodons to searching for life in outer space, for centuries humans have banded together to get things done – to work collectively towards a common goal. Typically, these efforts have been undertaken by individual tribal units or hierarchical structures containing like-minded souls united by similarities of skills, tasks and culture.

It is increasingly apparent that the nature and complexity of the problems confronting both public- and private-sector organizations in today's world demand a different approach. The number of problems that can be solved by a small group of specialists within a single or narrowly-defined field, discipline or culture is on the decline. Conversely, the number of problems solved using new ideas generated by combining existing concepts is on the rise.

Extraordinary solutions to intractable problems require the coordinated attention of skilled and often highly specialized individuals from multiple backgrounds and organizations, coming together in a collaborative environment. In the government sector, the proliferation of “Czars” is an implicit recognition of this approach, and emphasizes the difficulty of its execution. Each Czar must facilitate the productive collaboration of diverse people working on important problems that have, thus far, eluded solution.

New forms of cooperation and collaboration across disciplines and among specialists that previously worked in isolation from one another present a unique challenge right from the outset: an inability to effectively communicate. A common and agreed-upon language must be developed before the group can collectively attack its problem. A Lexicon is a communication tool that can provide the means.

#### CURRENT SITUATION

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In today's world, public- and private-sector organizations are challenged by the need to solve very tough problems. These problems are complex, presenting themselves

in sometimes unexpected ways. They are ambiguous, unpredictable and oftentimes non-linear. But their effective resolution can be transformative, shaping future operating environments and, indeed, civilization as a whole.

Problem-solving in a world of accelerating change is evolving. Small groups of specialists siloed within a narrowly defined field, discipline or culture possess highly developed, carefully honed expertise, but cannot spin a panoramic view of possibilities. Such singularity of purpose and competence is insufficient when confronting challenges and threats that require an arsenal of diverse tools, perspectives and brain power to devise solutions to sticky problems.

Novelty is the new norm. New ideas generated by new forms of cooperation and collaboration – enabled by new technologies – yield new forms of value. The coordinated attention of skilled and often highly specialized individuals from multiple backgrounds and organizations can generate extraordinarily powerful creative-strategic solutions.

However, the multi-disciplinary approach to solving complex problems presents certain difficulties. The first issue that rapidly formed teams of specialists must contend with is a confounding inability to communicate effectively, particularly when there is a lack of familiarity with one another's disciplines. Since technical specialists often exist in isolation, interfacing primarily with others who possess similar background, training, experience and expertise, they naturally develop their own unique jargon and acronyms, data definitions and representations, and analytical methods. They also develop sub-cultures with their own heroes, folklore, heritage and values. To gain the competitive advantage that naturally accrues to those who most rapidly access and combine knowledge and ideas in new and relevant ways, the team must adopt operating norms, beginning with a common and agreed upon language.

#### A DIFFERENT APPROACH

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To overcome the language barrier and to enable the sharing of

knowledge and information across previously incompatible databases, Toffler Associates created the Lexicon. Far different from glossaries which simply define terms, Lexicon creation is a networking activity that seeks agreement on terminology and relationships. Terms and definitions allow people to communicate. Relationships allow the machines that people use to exchange information with greater ease.

Toffler Associates possesses unique insights in Lexicon development, originally derived through the firm's central role in providing the coherent conceptual framework and operational vocabulary needed by the Weapons Technical Intelligence (WTI) Integrated Product Team to positively impact technical exploitation and analysis in the fight against roadside bombs and suicide bombers in Iraq and Afghanistan. Its success in unifying a diverse team comprised of Soldiers, Sailors, Airmen and Marines; bomb technicians; doctors; electrical engineers; lawyers; anthropologists; physicists; linguists; chemists; military, civilian and allied police officers; and intelligence analysts demonstrates the applicability of Lexicons for collaborative problem solving. To date, over 20,000 copies have been distributed, and it is posted on the NIPRnet and SIPRnet. It is currently in use by the Intelligence Community as well as by the Departments of Defense, Justice and Homeland Security. It is also actively consulted by local law enforcement bomb squads and S.W.A.T. teams as well as by international law enforcement for bomb data sharing. In short, it has enabled a federated search architecture across previously incompatible military, homeland security and civilian law enforcement bomb databases.

The use of a Lexicon to assist in the creation of novel solutions to intractable problems is not limited to military, law enforcement or intelligence community applications. It can be utilized to address any complex problem, the solution to which is best derived through collaboration across silos and organizations, across diverse technical disciplines or subject matter experts and across skilled participants and stakeholders with varying perspectives and objectives. It could be as easily applied to the challenges of a merger between commercial entities as it is to the ongoing challenges we face in Iraq and Afghanistan.

The development of a Lexicon is a structured approach that helps to ensure an organization's future success by

improving its ability to find solutions to tough problems. Its process components include:

- **Gaining Clarity, Defining the Problem**

The first step is to clarify the true challenge or threat within the context of both the future and the present. We examine an organization's tough problem and refine it until the RIGHT question is being asked. What is the future state? How do we help people see it?

- **Creating a Community of Interest**

The most effective collaboration is generated through a commonality of interest among those who have the same need to solve a complex problem and/or among those who possess the resources and expertise to contribute to its solution. This cadre of diverse technical expertise and stakeholders from different organizations is quickly unified by a shared sense of purpose. The nurturing and maintenance of this newly formed network of subject matter experts and stakeholders creates a standing resource that can be leveraged at a moment's notice to tackle emerging issues that require their unique blend of talents.

- **Bridging the Stove Pipes**

An unfettered exchange of insights and ideas requires a means of overcoming the communication barriers that likely exist between participants as well as the technology platforms that they utilize. The Lexicon provides the means, but its creation requires negotiation among multiple and often conflicting points of view to create an equitable solution.

There are many benefits to the use of a Lexicon as a communication tool in a multi-disciplinary collaboration process. The common language that it creates enables the following outcomes:

- Focuses the combined power of a portfolio of disciplines, intelligence, expertise and experience on a thorny challenge.
- Establishes inter-operability among disparate databases.
- Speeds the analysis of patterns and trends through the recording of data in standardized fashion.
- Produces results that can be leveraged across boundaries, both real and intangible.



*Toffler Associates is a dynamic, innovative advisory firm that serves as a catalyst for change to create bigger, more successful futures for its clients through transformation design.*

*The nature of change in the work performed by Toffler Associates is transformative because the problems in today's turbulent world are complex. Solutions developed through the transformation design process provide a path to a profitable, sustainable future through actions clients can execute today. These actions impact the behavior of individuals, as well as the structure and form of organizations and the systems that support them.*

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