



Taking the Long View in a Time of Great Uncertainty

A World Full of Critical Uncertainties

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The 56th INMM Annual Meeting held in Indian Wells this year had a special tension in the air as participants anticipated a possible announcement about the Iranian “nuclear deal,” now officially known as the *Joint Comprehensive Plan of Action* (JCPOA).¹ The “deal,” and whether it would be successfully culminated by one of the most intensive diplomatic negotiations in this generation, was a *critical uncertainty* the world was facing with respect to how a path to the future might play out, and was prominent in conversations during our meeting. On Tuesday morning, July 14, the news rippled through the meeting attendees like the wildfire in the San Jacinto Mountains that had threatened the Palm Springs area during our Annual Meeting in 2013. To have such an historic event occur during the INMM Annual Meeting made it a special time, with intense hallway discussions, information and idea sharing, and challenging questions for presenters during some of the technical presentations and panel sessions. The news was made even more pertinent because of the large number of international par-

ticipants who attended the meeting this year, including more than sixty international chapter members sponsored by the U.S. Department of State’s Partnership for Nuclear Security initiative.²

Yet, even with the announcement of a successful agreement, and throughout the subsequent debates on all sides, the actual implementation of the JCPOA is still uncertain, as is its ultimate “success.” This one issue touches on almost all facets of the Institute’s mission and engages many of our members and their institutions.

Critical Uncertainties — a Sign of Our Times

In the world of scenario planning, futurists will work with organizations and management teams to identify what is known as “*critical uncertainties*,” events or sequences of events that could result in a dramatic change for the path to the future, but at the current time are uncertain as to how they will play out. The classic example that is cited in scenario planning training is the U.S. presidential election. In November 2016 we know

there will be an election — that is a certain event. What the outcome of that election is, however, a critical uncertainty with respect to the future path the U.S., and perhaps, even the world, will travel. In particular, based on the early rhetoric in the run-up to the election, continued participation in the JCPOA by the U.S. might itself be in jeopardy with depending upon the election’s outcome.

In previous columns,³ I have identified and discussed “externalities,” a term that was used during the strategic planning activities of the Institute’s *Organizational Strategic Planning Working Group* (OSPWG) led by Ken Sorenson in 2009-2010 as the Institute reassessed its goals and organizational structure. The research into those externalities was intended to capture the issues, both domestically and internationally, that were impacting the Institute and its members, put them into strategic context, and then ask the question: “What do we need to do given this new environment to make the Institute as effective as possible for its membership?” The result of that work contributed to the strategic discussions that created the modified organizational structure for the Institute that exists today.⁴ These externalities, most of which are still valid five years later, form the basic knowledge through which discussions can identify the *critical uncertainties* of our time.

This column is intended to serve as a forum to present and discuss current strategic issues impacting the Institute of Nuclear Materials Management in the furtherance of its mission. The views expressed by the author are not necessarily endorsed by the Institute, but are intended to stimulate and encourage JNMM readers to actively participate in strategic discussions. Please provide your thoughts and ideas to the Institute’s leadership on these and other issues of importance. With your feedback we hope to create an environment of open dialogue, addressing the critical uncertainties that lie ahead for the world, and identify the possible paths to the future based on those uncertainties that can be influenced by the Institute. Jack Jekowski can be contacted at jjekowski@aol.com.



The Uncertainties of the World We Live In

In looking back at the “externalities,” issues, and “wildcards” that have been discussed in this column over the past four years, it is quite remarkable how many still exist today, and equally remarkable to see those that have emerged since the original strategic work done by the OSPWG. It is from these lists that we can identify those driving forces that are *most* critical and *most* uncertain as a starting point to develop future world scenarios which would engage the Institute’s membership in strategic discussions. A preliminary analysis of these uncertainties has captured the following “top level” *Critical Uncertainties*:

- **The proliferation of nuclear weapons technology.** The “genie is out of the bottle,” and the knowledge to build a nuclear weapon is now available not only to nation states, but also to non-state entities with evil intentions. The international community now must actively engage not only in the monitoring and control of nuclear materials, but also those specialized technologies and manufacturing processes that are leading indicators of undesirable activities. Can the scientific and diplomatic community employ the tools of the 21st century to accomplish this verification process, and at least control the “genie”? Where will this journey end? Will the path to the future be “global zero” or a nightmare scenario depicted in Hollywood movies?
- **The impact of the Fukushima nuclear event.** The tragic natural disaster of March 11, 2011, that triggered a sequence of nuclear events at the Fukushima nuclear power plant shook the confidence of much of the

world in the safety of nuclear power, much like the previous incidents at Chernobyl and Three Mile Island, negatively impacting the burgeoning “nuclear renaissance.”⁵ How will those events continue to impact the advance of nuclear power internationally, and will another future event sound the death knell for nuclear power as we know it?⁶

- **The rise of nationalism amid the modernization of nuclear forces.** From Crimea to the Senkaku Islands to the economic and military interest in the newly opened Arctic, there is a growing push by major powers, including the nuclear weapons states, to exert their influence in the world, while prominently modernizing nuclear aging stockpiles and delivery systems.⁷ Where will these new and threatening actions take the world during a time when perhaps memories are fading about the horrors of global conflicts?
- **The resolution of the Iranian nuclear issue.** As described in a previous column, the significant multi-national diplomatic effort to resolve the Iranian nuclear issue, strongly supported by the U.S., will be a “litmus test” for the Obama administration’s efforts to elevate diplomacy as “...*fundamental to our national security as our defense capability.*”⁸ As difficult as the negotiations were leading up to the final agreement, the path forward to successful implementation is fraught with challenges.
- **Geopolitical turmoil in the Middle East following the Arab Spring.** It was uncertain where the tumultuous events of the *Arab Spring* that began in Tunisia in December of

2010 would lead, and now, more than four years later, where they ultimately will end. These events also showed the world a new face of the power of social networks and the technology-enabled millennial generation.⁹ Will a stable and functional governing force emerge, or will we see the breakup of nation states during these difficult times?

This, of course, is not an exhaustive, nor a detailed list of uncertainties that we face today—in fact the development of driving forces and critical uncertainties in scenario planning typically engages many perspectives looking at social, technology, economic, and political events to characterize the environment that is influencing paths to the future. Readers are encouraged to submit their thoughts about the critical uncertainties that face the Institute in the coming years to the author for inclusion in a broader discussion. The ordering of those into the most critical and uncertain groups allows the scenario planner to begin to focus on a small subset of future worlds that are both challenging, yet feasible, leading to important strategic discussions of how to influence, or at least prepare for them.

Constructing the Scenarios

In its most useful form, an orthogonal construct using the two most distinctly different and impactful *critical uncertainties*, provides a landscape for creating four distinct and challenging future worlds.¹⁰ We will explore such a construct in future columns as feedback is obtained from the membership on the *critical uncertainties* we are facing. To whet the appetite of readers, a set of scenarios created by the author in 1998, looking at an otherwise potentially optimistic turn of the millennium, in the



context of the underlying critical uncertainties of the proliferation of nuclear weapons technologies and the theft or diversion of nuclear materials, painted one future world where the “*The Dominos Fall*.” This characterization, posited by Dr. Sig Hecker, former director of the Los Alamos National Laboratory, looked at a troubling time when more and more nations joined the “nuclear club.” In a later development for the INMM Southwest Chapter’s Annual Technical Meeting in 2002, the author created a new set of scenarios titled, “*The Future of Global Security*,” that addressed the dramatically changed environment of a post-9/11 world.¹¹ Both of these developments were used in their time to develop strategic discussions within the U.S. national security environment to prepare for future alternatives that were previously unimaginable.

And so it is with the times we live in...how shall we enter them: naively, or prepared, but uncomfortable? This is the underlying exercise necessary to address the answers to the question “what keeps you awake at night?”

Endnote

1. The Joint Comprehensive Plan of Action full text, and five Annexes can be found at: <http://www.state.gov/e/eb/tfs/spi/iran/jcpoa/>
2. See “Turning the Corner” *Journal of Nuclear Materials Management*, Volume 43, No. 1, pp. 65-67 for a more detailed discussion on this special initiative that is working with the INMM to create greater international involvement in the INMM, including student chapters.
3. See “Taking the Long View in a Time of Great Uncertainty” columns in *JNMM*, Volume 39, No. 1, pp. 39-41; Volume, 40, No. 4, pp. 148-149; Volume 41, No. 3, pp. 20-22; and Volume 42, No. 3, pp. 71-74.
4. See the following link on the INMM website for the most current functional organization chart for the Institute: http://www.inmm.org/AM/Template.cfm?Section=Organizational_Chart1&Template=/CM/ContentDisplay.cfm&ContentID=5037
5. See “A Strategic Inflection Point? The Nuclear Crisis in Japan” *Journal of Nuclear Materials Management*, Volume 39, No. 4, pp. 23-24, for a more detailed discussion on the early days after the March 11th incident.
6. In a recent paper, “Of Disasters and Dragon Kings: A Statistical Analysis of Nuclear Power Incidents & Accidents,” Wheatley, et al., Cornell University Library, <http://arxiv.org/abs/1504.02380>, the authors conclude: “*With the current model and in terms of dollar losses, there is a 50% chance that (i) a Fukushima event (or larger) occurs in the next 50 years, (ii) a Chernobyl event (or larger) occurs in the next 27 years and (iii) a TMI event (or larger) occurs in the next 10 years. Further, smaller but still expensive (≥ \$20 M in 2013 USD) incidents will occur with a frequency of about one per year.*”
7. For discussions on the modernization of nuclear stockpiles, see <http://thebulletin.org/modernizing-nuclear-arsenals-whether-and-how7881>, “Modernizing nuclear arsenals: Whether and how”; and <http://thebulletin.org/2015/may/how-approach-nuclear-modernization-russian-response8290>, “How to approach nuclear modernization?: A Russian response.”
8. See “As the World Turns...Toward a More Dangerous Place” *Journal of Nuclear Materials Management*, Volume 41, No. 4, pp. 111-11 for an excerpt from the U.S. National Security Strategy on this issue; and “International Collaborations Amid a 21st Century Test for Diplomacy” *Journal of Nuclear Materials Management*, Volume 43, No. 2, pp. 51-53 for a discussion on the strategic link between the Iranian diplomatic negotiations and role of the IAEA and the INMM.
9. See “Preparing for Social Chain Reactions” *Journal of Nuclear Materials Management*, Volume 39, No. 3, pp. 28-29 for a more detailed discussion on the early days of the Arab Spring and the uncertainty associated with regime changes that were occurring during that time; and “A Strategic Inflection Point? — The Nuclear Crisis in Japan” *Journal of Nuclear Materials Management*, Volume 39, No. 4, pp. 23-24, for an excerpt from a U.S. State Department presentation on the power and influence of the social media.
10. The seminal work of creating useful scenarios was presented in Peter Schwartz’s book “The Art of the Long View: Planning for the Future in an Uncertain World,” which can still be obtained on Amazon.
11. See <http://itpnm.com/inmm-post-9-11-scenarios.pdf> for this paper.