

Complex Systems Approach Provides Global Problem-Solving Edge

In mid-September, DCFR held the program "Global Transformation of Societies: Implications for Business and National Security," part of the 2017 Global Risk Series. Speaker and complex systems expert Yaneer Bar-Yam of the New England Complex Systems Institute discussed how the world is not governed by smooth trends but sharp transitions. In the moderated dialogue, board member David Kohl led panel members Professor Bar-Yam and Chairman and CEO Todd Bluedorn of Lennox International through a range of pressing issues.

Evolving over the last 20-30 years, the science of complex systems uses powerful mathematical tools to identify patterns that are shaping geopolitics and global economic trends. Professor Bar-Yam illustrated the factors that led to the Arab Spring in his presentation, one of which was world food prices stellar increase. He also revealed to the membership some of the origins of the escalations in price: early 2000 U.S. banking deregulation along with commodity market deregulation, the 2005 U.S. ethanol policy, and stock market deregulation of 2007. Knock-on effects and speculation from these policies caused world food prices to rise in 2008 and subsequent periods from 2010-2014.

After illustrating how the tools of complex systems can disentangle cause and effect, Bar-Yam highlighted how complexity is translating into governance and corporate settings. In an increasingly complex world, Bar-Yam noted that organizations need to become more distributed, including their decision-making; organizations should also better mirror the complexity of the environments in which they operate. Chief executive Todd Bluedorn commented that technology has accelerated the increasing interdependence of the global economy. Having focus and "picking where to play" is ever important for an organization adapting to a changing world, he opined.

Given the diffusion of information and the speed of its circulation today, the subject of the decentralization of decision-making and organizational structures arose. Speaking to this notion, Bluedorn mentioned that those more close to information should be given more authority. Thus, decentralized organizational structures and proper incentives matter too, he acknowledged. Bluedorn sees an increasing role for big data and business analytics. The complex systems perspective would consider big data more tactically focused. A takeaway from Bluedorn is that the human mind underestimates interdependence and the speed of change. Therefore humility is required to understand and adapt to changes.

From the systems side, Bar-Yam explained that some of the approaches used today do not overlay well with how the world of complexity is manifesting. He suggests that rather than looking at a crisis, such as the financial crisis of 2008-09, and

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learning how to avoid the next one, we need to allow the information being presented in the world to inform us. This means looking more broadly at trends to respond as 'the system' changes. "Complex systems lead to strategic analysis," Dr. Bar-Yam says. The work of complex systems is well-suited to analyzing pandemic-like outbreaks, terrorist organization structures and large-scale global phenomena. However, the same methods that help in understanding pandemics and global crisis are the ones needed for businesses operating and competing on a global stage.

Highlights provided by Jennifer Warren.

Yaneer Bar-Yam is a physicist, systems scientist, and founding president of the New England Complex Systems Institute. His research is based both on formalizing complex systems concepts and relating them to everyday problems.

Todd Bluedorn is Chairman and CEO of Lennox International Inc. Prior to Lennox, he served in numerous senior management positions in large technology and industrial companies. Bluedorn is a West Point graduate and served in the U.S. army.

David Kohl is a Principal of RHSB Insurance, a boutique insurance brokerage firm based in Dallas providing specialized insurance solutions to middle market companies for over 70 years.

The program was hosted by David J. Kohl, board member and principal with RHSB Insurance and David Emmons, board member and partner at Baker Botts L.L.P.