## What is the World Coming To: Global Crisis Analysis and Response

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I will review our analyses of the Global Financial Crisis, Global Food Crisis, European Bond Crisis, Arab Spring, and Ebola and the nature of global vulnerability in the face of increasing connectivity [1-9]. In these analyses we clarified the consequences of global socio-economic changes and government actions that created conditions and triggers for these events. Beyond the immediate policy recommendations that can be inferred, the analysis indicates a susceptibility to failure of effective decision making, whether by individuals, groups or governments. Given the nature of the vulnerabilities that these crises suggest, what are the implications for risks at the global scale and what should be done? Should we revisit globalization, and what alternatives are there? I will argue that the world will have to, and is making strides toward, adopting two radically different but complementary strategies: Much more effective distributed governance [10] and an increasing role for science.

## References:

[1] D. Harmon, B. Stacey, Y. Bar-Yam, Y. Bar-Yam, Networks of economic market interdependence and systemic risk. arXiv:1011.3707v2 (2010).

http://necsi.edu/research/economics/interdependence.html

[2] D. Harmon, and Y. Bar-Yam, Technical Report on SEC Uptick Repeal Pilot. NECSI Technical Report 2008-11

http://www.necsi.edu/research/UptickTechReport.pdf (2008).

[3] V. Misra, M. Lagi, Y. Bar-Yam, Evidence of market manipulation in the financial crisis.arXiv:1112.3095 (2011).

http://necsi.edu/research/economics/bearraid.html

[4] M. Lagi, Y. Bar-Yam, K.Z. Bertrand, Y. Bar-Yam, The Food Crises: A Quantitative Model of Food Prices Including Speculators and Ethanol Conversion. arXiv:1109.4859 (2011).

http://necsi.edu/research/social/foodprices.html

[5] M. Lagi, Y. Bar-Yam, The European debt crisis: Defaults and market equilibrium. arXiv: 1209.6369 (2012).

http://necsi.edu/research/economics/bondprices/

[6] D. Harmon, M. de Aguiar, D. Chinellato, D. Braha, I. Epstein, Y. Bar-Yam, Predicting economic market crises using measures of collective panic. arXiv:1102.2620v1 (2011).

http://necsi.edu/research/economics/economicpanic.html

[7] Alexander S. Gard-Murray, Yaneer Bar-Yam, Complexity and the Limits of Revolution: What Will Happen to the Arab Spring? arXiv:1212.3041, December 11, 2012.

http://www.necsi.edu/research/social/revolutions/

[8] E.M. Rauch and Y Bar-Yam, Long-Range Interaction and Evolutionary Stability in a Predator-Prey System. Physical Review E 73, 020903 (2006).

http://www.necsi.edu/research/evoeco/pre73/index.html

[9] V. Wong, D. Cooney, M. Hardcastle, Y. Bar-Yam, J.J. Okech-Ojony, Getting to Zero Cases: How to End the Ebola Outbreak in West Africa, New England Complex Systems Institute and WHO Liberia-Monrovia Response (February 27, 2015).

http://necsi.edu/research/social/pandemics/zerocases.html

[10] Y. Bar-Yam, Complexity rising: From human beings to human civilization, a complexity profile, Encyclopedia of Life Support Systems (EOLSS UNESCO Publishers, Oxford, UK, 2002); also NECSI Report 1997-12-01 (1997). http://www.necsi.edu/projects/yaneer/Civilization.html