

## **DATA BASED GLOBAL MODELING. Course Outline**

Paul R. Williamson  
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### **OBJECTIVES:**

The word "model" covers a lot of ground. First there is the question of what it means to have a model, and various meanings have been attached to the word. So one of the objectives is to impart to you an understanding of some of these meanings. In addition there are important differences, occasionally explicit but usually not, as to which kinds of modeling could or should be applied to the study of international relations. A second objective is that you become familiar with the distinctions. A corollary is that, by the end of the course, you should have thought enough about the issue to form your own opinion (possibly a reasoned decision to withhold judgement) and be capable of intelligibly articulating it and your basis of arriving at it.

This still leaves quit a bit of room, given the considerable assortment of global models and the phenomena to which one or another has been applied. Since no one of these approaches is satisfactory, but each contains a valuable aspect, I believe it important to address this variety. Thus we will cover the several variants suggested in the major headings below, at the cost that our examination of some areas (global war, international trade, ecology) will be very incomplete. Finally, while we will consider ideas informed by varying degrees of evidence, the emphasis will be on models defined in terms of quantitative, reproducible evidence, concepts with which you will become familiar.

### **COURSE REQUIREMENTS:**

First, enrollment in the course is only by permission of instructor.

Second, we seek to grasp and integrate some rather disparate material, concerning concepts and methods of inquiry, and various empirical phenomena. This requires independent evaluation, careful integration, diligent reading and note taking, and active classroom listening and speaking. Class sessions will emphasize discussions rather than lectures. There is considerable reading.

Third, grades will be based on a series of three papers, the second and third a revision of the one before. That is, you are to select a single topic and to revise and expand it in response to additional material that we encounter, and to the comments with which I will respond, at each submission or consultation. You should clear your choice of topic with me at the start and, if it becomes necessary to change topics, you should clear that as well. You should clear your initial choice by the end of the second week of classes. Paper drafts should be submitted at the conclusion of numbered units 5, 10 and 15, below.

### **GRADES:**

I will evaluate your grade as follows, with percentage of final grade listed to the right.

Classroom participation (10%)  
Paper, 1st draft (20%)  
Paper, 2nd draft (20%)  
Paper, final draft (50%).

**READING:**

There is no text. All materials mentioned below will be on reserve in the Graduate Library. Among the required reading (under the heading "**Read:**"), much of the material will also be available in course packs.

I am perfectly aware that you cannot read everything listed, but try to keep up with what is on the "required" list. The word "skim" at the end of a citation means that you may give it a  *cursory* reading. This usually applies to long or highly technical material, for which a detailed grasp may be foregone, for purposes of this course. That is: no need to "freak out" on the mathematics or lengthy passages-- just look for the general idea, and bring up the problems in class. You will have plenty of company!

The optional material is for your choice of further background, which may suggest paper topics.

**TOPICS AND READING:****1. Scientific method and epistemology****Read:**

Ashby, W. Ross (1960) *Design For a Brain* (rev. ed.). London: Chapman & Hall, Ltd. (First published 1952.), pp. 1-43.

Feynman, Richard P. (1965) *The Character of Physical Law*. Cambridge, MA: M.I.T. Press, pp. 13-58.

Layzer, David (1984) *Constructing the Universe*. New York: W. H. Freeman, pp. 1-59.

Platt, John R. (1964) "Strong Inference." *Science* 146, 3642 (16 Oct.): 347-353.

Williamson, Paul R. (1989b) "Requirements for a Global Information and Forecasting Service." Ann Arbor, MI: Correlates of War project, Dept. Pol. Sci., Univ. of Mich. (unpublished).

**2. "Static" Relationships****Read:**

Ashby (1960) *op. cit.* pp. 44-57.

Horvath, William J (1968) "A Statistical Model for the Duration of Wars and Strikes." *Behavioral Science* 13, 1 (Jan.): 18-28.

Richardson, Lewis F. (1960b) *Statistics of Deadly Quarrels*. Pittsburgh: The Boxwood Press and Chicago: Quadrangle Books, pp. 247-287 (skim).

Stephan, G. Edward (1977) "Territorial Division: The Least-Time Constraint Behind the Formation of Subnational Boundaries." *Science* 196 (29 April): 523-524.

Tufte, Edward R. (1974) *Data Analysis for Politics and Policy*. New York: Prentice-Hall, pp. 1-30.

Wesley, James Paul (1962) "Frequency of Wars and Geographical Opportunity." *Jour. Conflict Resolution* VI, 4: 387-389.

Wilkinson, David O. (1980) *Deadly Quarrels*. Berkeley, CA: University of California Press (skim).

### 3. Dynamics of Continuous Variables

#### Read:

Boulding, Kenneth E. (1963) *Conflict and Defense: A General Theory*. New York: Harper & Row., pp. 19-40 and 105-122.

Kachigan, Sam Kash (n.d.) "A Short Course in Exponents & Logarithms" (unpublished).

McGuire, Martin (1965) *Secrecy and the Arms Race*. Harvard Economic Studies. vol. 125. Cambridge, MA: Harvard Univ. Press., pp. 158-182.

Richardson, Lewis F. (1960a) *Arms and Insecurity*. Pittsburgh: The Boxwood Press and Chicago: Quadrangle Books, pp. 12-36, 95-97, 145-148.

Singer, J. David (1970) "Escalation and Control in International Conflict: A Simple Feedback Model." *General Systems* XV: 163-173.

Tuma, Nancy Brandon and Michael T. Hannan (1984) *Social Dynamics: Models and Methods*. Orlando, FL: Academic Press, pp. 331-383.

Williamson, Paul R. (1984) "Suggestions for Incorporating Richardson Processes Into Sarum." Honolulu: Global Models and the Policy Process Project, East-West Center (unpublished memorandum).

#### At your option, for further background read or skim:

Abelson, Robert P. (1963) "A 'Derivation' of Richardson's Equations." *Jour. Conflict Resolution* VII, 1: 13-15.

Forrester, Jay W. (1973) "Counterintuitive Behavior of Social Systems," in Jay W. Forrester (ed.) *Collected Papers of Jay W. Forrester* (pp.211-244). Cambridge, MA: Wright-Allen Press. Also in Dennis L. Meadows and Donella H. Meadows (eds.) *Toward Global Equilibrium: Collected Papers*. Cambridge, MA: Wright-Allen Press, 1973.

Richardson (1960a) *op. cit.*, pp. 37-51 and 163-183.

Wagner, David L., Ronald T. Perkins and Rein Taagepera (1974) "Fitting the Soviet-U.S. Arms Race Data to the Complete Solution of Richardson's Equations." Presented at Western Regional Peace Science Meeting, San Diego (22 Feb.). Irvine, CA 92664: R. Taagepera, School of Social Sciences, Univ. of Calif, Irvine.

### 4. Continuous Variable Models

#### Read:

Chadwick, Richard W. (1984) *Global Models and the Policy Process (GMAPP) Project: Summary of Objectives, Findings, and Concrete Results*. Honolulu: GMAPP project, East-West Center.

Parker, Kim T. (1981) "Data Preparation for an India and Other South Asia Disaggregation of the SARU-AREA Global Model" Open Grants Working Paper. Honolulu, HI 96848: Global Models and the Policy Process (G-MAPP) Project, East-West Center.

**At your option, for further background read or skim:**

Bremer, Stuart (1987) (ed.) *The GLOBUS Model: Computer Simulation of Worldwide Political and Economic Developments*. Boulder, CO: Westview Press.

Deardorff, Alan V. and Robert M. Stern (1986) *The Michigan Model of World Production and Trade* Cambridge, MA: The MIT Press.

Lambelet, John C. (1971) "A Dynamic Model of the Arms Race in the Middle East, 1953-1965." *General Systems XVI*: 145-167.

Meadows, Donella H., Dennis L. Meadows, Jorgen Randers, and William W. Behrens III (1972) *The Limits to Growth: A Report on the Club of Rome's Project on the Predicament of Mankind*. New York: Universe Books.

Onishi, Akira (1981) "Projections of the World Economy, 1980-1990, Using FUGI Global Macro Economic Model, Type IV 011-62 --Scenario Forecasts of the OPEC Strategy for Oil Pricing." Presented at Seminar on Comparative Simulations of Global International Economic Models (25-26 June), Stanford Univ. Hachioji-shi, Tokyo 192: Institute of Applied Economic Research, Soka Univ.

\_\_\_\_\_ (1983) "The Economic Consequences of Arms Race and Global Disarmament: Simulation Analyses Using a Global Economic Model." Presented at World University Congress (15-17 August), Tokyo. Hachioji-shi, Tokyo 192: Center for Global Modeling, Soka Univ.

Ward, Michael D. and Lewis L. House (1988) "A Theory of Behavioral Power of Nations." *Journal of Conflict Resolution* 32: 3-36.

## 5. Cyclical Models

**End of section: submit first draft of paper.**

**Read:**

Boulding (1963) *op. cit.*, pp. 123-144.

Feynman, Richard P., Robert B. Leighton, and Matthew Sands (1963) *The Feynman Lectures on Physics* Vol. 1. Reading, MA: Addison-Wesley, chapters 21 and 22 (skim).

Milsum, John H. (1968) (ed.) *Positive Feedback: A General Systems Approach to Positive/Negative Feedback and Mutual Causality*. Oxford: Pergamon Press, pp. 23-65 (skim).

Pudiate, Paul R. (1988) "Modeling Long Cycles in War and Production." Presented at Third World Peace Science Congress, Univ. of Maryland (30 May), College Park, MD. 512 E. Chalmers St., Champaign, IL 61820: Merriam Laboratory for Analytic Political Research, Univ. of Ill. at Champaign-Urbana.

Tuma and Hannan (1984), pp. 506-509.

**At your option, for further background read or skim:**

Feynman, *et al.* (1963) *op. cit.*, chapters 23-25.

Feynman *et al.* (1965), chapter 8 and chapter 11, section 11-6.

Kemeny, John G. and J. Laurie Snell (1962) *Mathematical Models in the Social Sciences*. Cambridge, MA: M.I.T. Press, pp. 24-34.

Khinchin, A. I. (1957) *Mathematical Foundations of Information Theory*, trans. R. A. Silverman and M. D. Friedman. New York: Dover, chapter 1.

Richardson (1960a) *op. cit.*, pp. 37-51.

Singer, J. David, Paul R. Williamson, Walter R. Mebane, Jr. and Carl P. Simon (1989) "From War to War: the Role of Major Power Decline and Response, 1816-1965." Proposal submitted to the National Science Foundation (11 Jan.). Ann Arbor, MI: Dept. Pol. Sci., Univ. of Michigan.

Winfree, Arthur T. (1987) *The Timing of Biological Clocks*. New York: W. H. Freeman.

**6. Evidence For Cycles****Read:**

Doran, C. F. and W. Parsons (1980) "War and the Cycle of Relative Power." *American Political Science Review* 74: 947-965.

Goldstein, Joshua S. (1987) "Long Waves in War, Production, Prices, and Wages," *Jour. Conflict Resolution*. 31, 4 (Dec.): 573-600.

Small, Melvin and J. David Singer (1982) *Resort to Arms: International and Civil Wars, 1816-1980*. Beverly Hills, CA: Sage. chapter 8.

Thompson, William H. (1988) *On Global War: Historical-Structural Approaches to World Politics*, pp. 85-111.

**At your option, for further background read or skim:**

Denton, Frank and Warren R. Phillips (1968) "Some Patterns in the History of Violence." *Jour Conflict Resolution* 12: 182-195.

Goldstein, Joshua S. (1988) *Long Cycles: Prosperity and War in the Modern Age*. New Haven, CT: Yale Univ. Press.

Kennedy, Paul (1988) *The Rise and Fall of the Great Powers*. New York: Random House.

Melko, Matthew (1990) *Peace in Our Time*. New York: Paragon House.

Modelski, George (1983) "Long Cycles of World Leadership" in William R. Thompson (ed.) *World System Perspective*. Beverly Hills, CA: Sage.

Olson, M. (1982) *The Rise and Decline of Nations*. New Haven, CT: Yale Univ. Press.

Singer, J. David and Thomas Cusack. (1981) "Periodicity, Inexorability, and Steersmanship in Major Power War" in Richard Merritt and Bruce M. Russett (eds.) *From National Development to Global Community* (pp.404-422). London: George Allen and Unwin.

### **7. Variations in the Distribution of Material Capabilities.**

#### **Read:**

Ray, James Lee and J. David Singer (1973) "Measuring the Concentration of Power in the International System." *Sociological Methods and Research* 1, 4: 403-437.

Russett, Bruce M. (1968) "Is There a Long-run Trend Toward Concentration in the International System?" *Comparative Political Studies* 1: 24-47.

Thompson, William R. (1983a) "Cyclical Transformations, Capability Concentration and War: An Ecumenical View" in W. R. Thompson (ed.) *World System Perspectives*. Beverly Hills, CA: Sage.

Williamson, Paul R. (1989a) "Investigation of Periodicities in International Conflict by Graphical Means." Presented at Annual Meeting, Amer. Pol. Sci. Assn. (Aug.-Sept.), Atlanta. Ann Arbor, MI 48109: Correlates of War project, Dept. Pol. Sci., Univ. of Mich.

### **8. Secular Disequilibria: "Modernization"**

#### **Read:**

Boulding (1963) *op. cit.*, pp. 58-79, 227-245, and 248-276.

Bueno de Mesquita, Bruce, James D. Morrow, Randolph Siverson, Alastair Smith (1998) "Endogenous Political Institutions and the Survival of Leaders." \_\_\_\_\_[JCR?].

Rashevsky, Nicolas (1968) *Looking at History Through Mathematics*. Cambridge, MA: M.I.T. Press, pp. 15-93 (skim).

Taagepera, Rein (1968) "Growth Curves of Empires." *General Systems XIII*: 171-175.

\_\_\_\_\_ (1986) "Growth and Decline of Empires Since 600 AD." Prepared for 27th Annual Convention, International Studies Assn. (26-29 March), Anaheim, CA Irvine, CA 92664: School of Social Sciences, Univ. of Calif., Irvine.

Wilkinson, David O. (1987) "Central Civilization." *Comparative Civilizations Review* 17 (Fall): 31-59.

#### **At your option, for further background read or skim:**

Cipolla, Carlo M. (1974) *The Economic History of World Population* 6th ed. Baltimore: Penguin Books. (First published 1962.)

McNeil, William H. (1976) *Plagues and Peoples*. Garden City, NY: Anchor Press/Doubleday.

Organski, A. F. K. (1965) *The Stages of Political Development*. New York: Alfred A. Knopf.

Organski, A. F. K. and Jacek Kugler, J. Timothy Johnson, and Youssef Cohen (1984) *Births, Deaths, and Taxes: The Demographic and Political Transitions*. Chicago: Univ. of Chicago Press.

Organski, Katherine and A. F. K. Organski (1961) *Population and World Power*. New York: Alfred A. Knopf.

### **9. Evidence for Inter-Century, Pre- Post- Nuclear, and Other Discontinuities and Shifts.**

#### **Read:**

Singer, J. David (1980) "Accounting for International War: The State of the Discipline." *Annual Review of Sociology*, 6:249-367. Also in *J. Peace Research* XVIII(1): 1-18 (skim).

Singer, J. David and Melvin Small (1968) "Alliance aggregation and the onset of war, 1815-1945" in J. David Singer (ed.) *Quantitative International Politics: Insights and Evidence* (pp.247-286). New York: Free Press.

Stoll, Richard J. (1982) "Major Power Interstate Conflict in the Post-World War II Era: an Increase, a Decrease, or No Change?" *Western Political Quarterly* 35, 4: 587-605.

Taagepera, Rein (1976) "Crisis Around 2005 A.D.? A Technology-Population Interaction Model." *General Systems* XXI, 1976: 137-138.

\_\_\_\_\_ (1978) "The Super-Cancer of the Biosphere." Prepared for Peace Science Society (International) Western Section Meeting, (27-28 Feb.), Stanford Univ. Irvine, CA 92664: School of Social Sciences, Univ. Calif., Irvine.

Williamson, Paul R., John Warner, and Stephen A. Hopkins (1988) "A Model of International Dispute Onsets With Preliminary Application to the Impact of Nuclear Weapons." Ann Arbor, MI: Correlates of War project, Dept. Pol. Sci., Univ. of Mich. (unpublished).

### **10. Global War Modeling.**

**End of section: submit second draft of paper.**

#### **Read:**

Huth, Paul K. (1988) *Extended Deterrence and the Prevention of War*. New Haven, CT: Yale University Press., chapter 4.

Organski, A. F. K. and Jacek Kugler (1980) *The War Ledger*. Chicago: Univ. of Chicago Press. pp. 13-63 and 147-179 (skim).

Rourke, John T. (1988) "1914 and *Deja Vu*: an Anterior Future." The Society for Historians of American Foreign Relations *Newsletter* 19, 4 (Dec.): 33-46 (skim).

Wallace, Michael D., Brian L. Crissey and Linn I. Sennott (1986) "Accidental Nuclear War: A Risk Assessment", *Jour. of Peace Research* 23, 1: 9-27.

Wayman, Frank W. (1989) "Power Shifts and War" prepared for Annual Meeting, International Studies Assn., London (29 Mar. - 1 Apr.). Dearborn, MI: Dept. Pol. Sci., Univ. of Mich. (skim).

Williamson, Paul R. (1986) "Accident and Deliberation as Elements in the Outbreak of War." *Peace Research Reviews* X, 4: 76-83.

Yamamoto, Y. and Stuart A. Bremer (1980) "Wider Wars and Restless Nights: Major Power Intervention in Ongoing War" in J. David Singer (ed.) *The Correlates of War II: Testing Some Realpolitik Models* (pp.199-229). New York: Free Press (skim).

**At your option, for further background read or skim:**

Axelrod, Robert M. (1970) *Conflict of Interest: A Theory of Divergent Goals with Applications to Politics*. Chicago: Markham Pub. Co., pp. 19-57.

Bueno de Mesquita, Bruce (1985) "The War Trap Revisited: A Revised Expected Utility Model." *American Political Science Review* 79: 156-173.

Gochman, Charles S. and Zeev Maoz (1984) "Militarized Interstate Disputes, 1816-1976: Procedures, Patterns, and Insights." *J. Conflict Resolution* 28 (Dec.): 585-616.

Houweling, Henk W. and Jan G. Siccama (1990) "Power Transitions and Critical Points as Predictors of Global War: a Synthesis." Amsterdam, Netherlands: Univ. of Amsterdam and The Hague, Netherlands: Netherlands Institute of International Relations "Clingendael" (unpublished).

Midlarsky, M. I. (1975) *On War: Political Violence in the International System*. New York: The Free Press.

Singer, J. David (1980) "Accounting for International War: The State of the Discipline." *Annual Review of Sociology*, 6:249-367. Also in *J. Peace Research* XVIII(1): 1-18.

Singer, J. David, Stuart A. Bremer, and John Stuckey (1972) "Capability Distribution, Uncertainty and Major Power War, 1820-1965" in Bruce M. Russett (ed.) *Peace, War and Numbers* (pp. 19-48). Beverly Hills, CA: Sage.

Thompson, William R. (1983b) "Succession Crises in the Global Political System: A Test of the Transition Model" in A. L. Bergesen (ed.) *Crises in the World-System*. Beverly Hills, CA: Sage.

Wilkinson (1980) *op. cit.*, chapters 7 and 8.

**11. Dynamics of Discrete Variables**

**Read:**

Cioffi-Revilla, Claudio (1984) "European Political Cooperation: an Application of Political Reliability Theory to Integration," *International Studies Quarterly*. 28, 4: 467-492.

\_\_\_\_\_ (1985) "Political Reliability Theory and War in the International System," *American J. of Political Science*. 29, 1 (Feb.): 45-68.

Houweling, Henk W. and J. B. Kune (1984) "Do Outbreaks of War Follow a Poisson-Process?" *Jour. Conflict Resolution* 28, 1 (March): 51-61.

Poincare, Henri (1956) "Chance" in James R. Newman (ed.) *The World of Mathematics* Vol. 2 (pp. 1380-1394). New York: Simon and Schuster.

Singer, J. David (1989) "Whatever Happened to World War II, or Why No Major War Since the Nagasaki Bomb?" Ann Arbor, MI: Dept. Pol. Sci., Univ. of Mich. (Feb.) (unpublished lecture notes).

Tuma and Hannan (1984), pp. 43-115.

**At your option, for further background read or skim:**

Kalbfleisch, J.G. and R. L. Prentice. (1980) *The Statistical Analysis of Failure Time Data*. New York: John Wiley.

**12. The Nation-Dyadic Level**

**Read:**

Isard, Walter (1989) *Arms Races, Arms Control and Conflict Analysis: Contributions from Peace Science and Peace Economics*. Cambridge: Cambridge Univ. Press, chapter 9.

Williamson (1988) "A Measure of the Contribution of Capability Change to Conflict." Ann Arbor, MI: Correlates of War project, Dept. Pol. Sci., Univ. of Mich. (27 April) (unpublished).

Williamson, *et al.* (1988) *op. cit.*, review.

**At your option, for further background read or skim:**

Boulding (1963) *op. cit.*, pp. 245-247.

Bremer, Stuart (1989) "Capability, Distance and Dispute Outcomes: An Empirical Assessment of Loss-of-Strength." Prepared for Twenty-Third North American Peace Science Conference, Ohio State Univ. (Nov.).

Catton, William R., Jr. (1965) "The Concept of 'Mass' in the Sociological Version of Gravitation" in Fred Massarik and Philburn Ratoosh (eds.) *Mathematical Explorations in Behavioral Science* (pp.287-316). Homewood, IL: Richard D. Irwin, Inc. and the Dorsey Press.

Diehl, Paul F. (1985) "Contiguity and Military Escalation in Major Power Rivalries, 1816-1980," *Jour. of Politics*. 47: 1203-1211.

Huff, David L. (1965) "The Use of Gravity Models in Social Research" in Fred Massarik and Philburn Ratoosh (eds.) *Mathematical Explorations in Behavioral Science* (pp.317-321). Homewood, IL: Richard D. Irwin, Inc. and the Dorsey Press.

Morrow, James D. (1987) "Alliances and Asymmetry: A Theoretical Study of Alliance Durations and Patterns." Revision of presentation at Annual Meeting, Amer. Pol. Sci. Assn., Chicago (April 1987). Ann Arbor, MI: Dept. Pol. Sci., Univ. of Mich.

**13. Global Structures**

**Read:**

Feynman *et al.* (1963) *op. cit.*, chapters 9 and 11.

Galtung, Johan (1971) "A Structural Theory of Imperialism." *J. Peace Research* 2: 81-117. (skim).

Lindbloom, Charles E. (1959) "The Science of 'Muddling Through'." *Public Administration Review* XIX (Spring): 79-88.

Williamson, Paul R. (1985) "A 'Physical' Model of World Politics." *Systems Research* 2, 3: 221-235. (skim).

\_\_\_\_\_ (1989a) *op. cit.*, (review).

#### **14. Nonlinearity**

##### **Read:**

Crutchfield, James P., J. Doyne Farmer, Norman H. Packard and Robert Shaw (1986) "Chaos." *Scientific American* 255: 46-57 (Dec.).

Farmer, J. Doyne and John J. Sidorowich (1988) "Can New Approaches to Nonlinear Modeling Improve Economic Forecasts?" in Philip W. Anderson, Kenneth J. Arrow, and David Pines (eds.) *The Economy as an Evolving Complex System* (pp.99-115). Redwood City, CA: Addison-Wesley.

Holland, John H. (1988) "The Global Economy as an Adaptive Process" in Philip W. Anderson, Kenneth J. Arrow, and David Pines (eds.) *The Economy as an Evolving Complex System* (pp.117-124). Redwood City, CA: Addison-Wesley.

Mebane, Walter R., Jr. (1989) "Balancing Forces in Spheres of Influence: A Large-Scale Dynamic Model." Presented at the Annual Meeting of the Midwest Political Science Association (April 13-15), Chicago. Ithaca, NY: Cornell Univ. (skim).

Savit, Robert (1987) "When Random is Not Random: An Introduction to Chaos in Market Prices." Ann Arbor, MI: Department of Physics, University of Michigan, 1987 (unpublished).

#### **15. Physical Approaches to Global Modeling**

**End of section: submit final draft of paper.**

##### **Read:**

Iberall, Arthur S. (1975) "On Nature, Man, and Society: a Basis for Scientific Modeling." *Annals of Biomedical Engineering* 3: 344-385.

Modelski, George (1985) "Physics or World System Analysis? Reflections on the Iberall-Wilkinson Program." Prepared for Annual Meeting, International Studies Assn.(6-8 Mar.), Washington, DC. Univ. of Washington.

Rashevsky, Nicolas (1968) *Looking at History Through Mathematics*. Cambridge, MA: M.I.T. Press. pp. 130-164 (skim).

Wilkinson, David O. and Arthur S. Iberall. (1985) "From Physics to World Politics" in Margaret Carns, ed. *Persistent Patterns and Emergent Structures in a Waning Century*. Praeger (skim).