

“Can Game Science Really Work for Economic Development & the Sustainable Future of America?”

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Enabling Game Science Research for Transforming Regional Economic Development Policy in United States of America for the Early 21st Century

CHALLENGE TITLE:

“Can Game Science Really Work for Economic Development & the Sustainable Future of America?”

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RELEVANT READINGS

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2. **Regional Governance, Institutions and Development**, Michael Danson and Geoff Whittam © 1999, Regional Research Institute, West Virginia University
3. **Measuring Regional Innovation**, © 2005 Council on Competitiveness, prepared for the U.S. Department of Commerce, Economic Development Administration.

Note concerning references: The references above were used as the overall foundation of thought found in this white-paper. However, the author has taken measures to assure the research and development of scientific application as defined by the papers title is original and uniquely qualified herein. All opinions, conclusions and errors are the author’s own.

CITATIONS

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KEYWORDS

Game Theory; National Ocean Policy; Regional Ocean Governance; Game Science; Coastal and Marine Spatial Planning Initiative; Regional Ocean Partnership Funding Program; Ocean Education, Technology and Sciences Partnership; Regional Ocean Economic Development; Non-Cooperative Game Theory; Regional Partnerships; Sustainable Development

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GLOSSARY OF TERMS

Agent: Also known as a Player. An agent is a representative in the game or games by which they are known or unknown by other agents to create or affect the outcome dynamic of the game being played¹.

Economic Development: The technical profession of economic science integrating social development whether for policy development or policy, program and project management.

Game: A game is a formal description of a strategic situation.

Game Theory: A defined and qualified language of analysis established by a set of qualitative or quantitative metrics applied by agents to achieve a situational outcome.

Greater Good: An opinion of that which creates or embodies the summation of individual good, represented by the unified whole.

Organizational Psychology: The integral method by which organizations determine common values based upon the overall organization’s mission and/or vision as embodied by the thinking of management, employees, members and volunteers.

Organizational Rationality: Management process of an organization to make decisions rationalized by needs of organization rather than individual or individual process.

Pareto Optimal: Given a set of alternative allocations of goods or outcomes for a set of individuals, a change from one allocation to another that makes at least one individual better off without making any other individual worse off is called a Pareto improvement or a Pareto-optimal move².

P3: Private-Public Partnership engaged in representation of industrial-government interests for specific area/cluster. A preferred management model used in technology led innovation.

Prosperity Outcome: Prosperity outcome can be defined by many subjective parameters, but is generally measured by financial metrics such as per-capita income, median household income, and other indices of public wealth.

Non-Cooperative Game and Nash Equilibrium: A non-cooperative game is one in which players make decisions independently. Thus, while they may be able to cooperate, any cooperation must be self-enforcing. If all players have chosen a strategy, and no one player can benefit by changing strategy while the other strategies remained unchanged, then current strategy and the corresponding payoffs constitute the Nash Equilibrium³.

¹ Citation 1

² Citation 2

³ Reading 1

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ABSTRACT

For purposes of this paper, Game Science is defined as the strategic study of environmental, economic and/or social situational world qualified by explanations and/or predictions made by economic practitioners establishing postulated theorems based upon player interaction with the games of policy development and management. When these practitioners actively apply sustainable development principle to measures of economic effectiveness for social, behavioral and economic elements within their economic system of influence, they have the greatest ability to stimulate innovation and prosperity⁴. Specific to the authors' focus, this paper attempts to establish requirements for NSF research funding in building the bridges between Game Science, National (Ocean) Policy, Regional Governance and (Ocean) Economic Development fostering Sustainable (Ocean) System Prosperity. If Game Science bridges can be strategically built short-term, future Regional Ocean Partnership funding is streamlined long-term. Game science must drive innovation and be regionally identifiable for determining multi-level process efficiency. Concepts herein are explained by terms of the statistical process and not mathematical attribute for benefit of the game theory unfamiliar reviewer.

This paper establishes a requirement for establishing NSF Regional Game Science funding for perpetual economic science research as applied to policy development for creating a better social economic efficiency.

⁴ Reading 3

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Social Economic Prosperity

It can be said only of the profession, economic developers serve two masters, the game and the demographic – Unknown.

Economic development is essentially defined as economics on a social level, the professional industry of highly specialized practitioners. The practitioners (agents) have two key roles: one provides *policy-making leadership*, and the other is to *administer policy, programs, and projects*. To practice at highest levels of the craft, the economic developer must creatively and wisely utilize non-cooperative game theory for bringing prosperity to their specific governmental, industrial, and/or community demographic. Since the proverbial ‘silver-spoon of prosperity’ has become the theoretical goal of the practitioner⁵, it has become inherent in most games to find dissimilar contexts of prosperity outcome amongst the players with differing industrial and organizational values. It must therefore be postulated that an economic practitioner engaging in policy leadership must have reasonable understanding of industrial and organizational motivations for defining prosperity, including random social variables existing between spiritual and socio-economic contexts. Of main concern, social context or precept may unreasonably influence a player’s confluence with frontier science discovery and therefore may adversely alter the players Dynamic Strategic Thinking process⁶. In reference, the author opines the following statement to be true: “if an economic practitioner specializing in policy leadership effectively applies a modicum of Organizational Rationality to the dissimilarity dynamics intrinsic to social science, systemic strategic thought process is exponentially raised when the players unilaterally agree to the rationality process. As a result of this agreement, the trust of public knowledge can be distributed effectively throughout the system and the number of economic prosperity outcomes increase regardless of social context. Furthermore, the policy can effectively evolve congruently with system supply and demand over time. This is an area of Game Science research yet to be funded and should be considered as the key element for advancing the domain.

Some known elements for study of social context are socio-economic influence, communal ideology, industrial or government association, knowledge control, tort and criminal law, politics, heritage, personal and religious belief, culture, ethics and other social aspects; the economic development practitioner who specializes in policy leadership must be uniquely qualified to challenge systems to find Nash Equilibrium and derive Pareto Optimum Improvements for governmental, industrial and public innovation.

⁵ Reading 3

⁶ Citation 3

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With our States, Nation and Territories still facing economic challenges to stabilize our position in the global economy, practitioners engaged with policy leadership face immediate challenges to develop new economic models to construct/re-construct industrial income streams, improve and equalize taxation, reduce unemployment, create stability in our workforces, increase safety, and generate higher per capita/household income levels. The only answer must be, “redefine the game and develop economic policy driven by smart and effective science.” In order for economic development professionals to effectively engage in building a stronger Social Economic America with Economic Prosperity and Innovation as the goal, we must perpetually fund Game Science through the National Science Foundation Social, Behavioral and Economic Directorate, engage economists to structure prosperity based National/Regional/Industrial Clustering Strategies and effectively build knowledge dissemination campaigns designed for increasing public economic literacy.

Enabling Regional Game Science

By nature of the term, ‘policy development’ economic developers often face probability curves heavily favoring the original economic or environmental systems of which they are players and practitioners; this may cause difficulty when existing multiple-use management systems in place do not necessarily support new industrial innovation or progressive governance system models. With this in mind, the diligent policy analyst will first identify ‘stagnant’ processes by natural, physical and time induced elements that significantly impact the implementation of policy through probability analysis; the ultimate motive is to reduce variation and to stabilize random probability. In doing so, the concept of probability distribution and the number of random variables should be mathematically reduced to, or near zero-sum; when this is achieved, normalized statistical data can then be used to substantiate progress within the multi-managed system to drive efficient innovation, quality and growth. The lofty goal of economic efficiency can best achieve innovation when management models evaluate population, environment, habitat and industrial growth over large areas defined by spatial boundary. In this case, Regional Private-Public Partnerships are preferred models. With establishment of any governance system, there comes requirements for supporting the governance infrastructure; this requires a substantial technology investment making sure perpetual funding is accountable by quality management personnel responsible to the funding sources. When enabling the concept of Game Science to measure innovation and economic impact of the Regional Governance model, it is:

- 1) Imperative to employ agents highly knowledgeable in professional or technical areas of policy research to set economic development standards;
- 2) Necessary to build agent intellectual capital through well funded training programs;
- 3) Required to develop a system of metrics capable of measuring social economic impact with a reporting and feedback function for perpetual analysis.

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Administrative funding priorities for NSF Regional Game Science:

- 1) Establish dedicated funding streams for Strategic Planning Organizations (SPOs) and Private-Public Partnerships (P3) employed to build-out infrastructure essential for managing the long-term economic and industry growth within regional clusters⁷.
- 2) Allocate funding for Regional Science Parks and Industrial Incubators thorough NSF SBIR Program; properly developed and managed, this program provides institutional infrastructure linking business/university activities with P3 RDO Partnerships above.
- 3) Promote Corporate Social Responsibility (CSR) match funding in economic/industrial not-for-profit partnerships. Organize clearing house investment opportunities for private industry benefitting the Small and Medium Enterprises (SMEs).

In summation, it is simple to say that every living thing on this planet is somehow connected to Survival of the Natural World, but how human’s survival instincts are socially linked to its economic vitality derived from Nature is an ever-changing process. The purpose of Game Science is to apply a defined metrics system based in scientific method to better understand socio-natural impacts between Environment, Animals and the Supply/Demand for Goods. In context of Regional Governance, it is important to understand the situational outcomes of these interactions are what ultimately define a socially healthy system where common demographics exist. If regions begin working together to share data, educate and nationally disseminate knowledge, we build economic development systems embracing sustainable development paradigms of the American Management System. Of interest, knowledge in sustainable economic development is being accomplished by professional groups such as International Economic Development Council located in Washington D.C. On the academic level, programs like the Regional Research Institute (RRI) at West Virginia University are building Frontiers for Regional (Ocean) Governance and (Ocean) Economic Development infrastructures. These programs build a stronger Socio-Economic America through science discovery; perpetual discovery requires sustainable 21st Century funding to meet the needs of societal growth.

END

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⁷ Reading 2