**The George Washington University**

***University Seminar on Reflexive Systems***

**Wednesday, February 27, 2019, 10 a.m. to noon**

**Funger Hall 320**

**2201 G Street NW**

**The Ecosystem as Helix**

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Regions are increasingly being viewed as eco-systemic agglomerations of organizational and institutional entities or stakeholders that have socio-technical, socio-economic, and socio-political goals, priorities, expectations, and behaviors that may be conflicting as well as converging (co-opetitive) in nature. Said stakeholders pursue the realization of their goals by engaging in entrepreneurial development, exploration, exploitation, and deployment (DEED) actions, reactions and interactions. The Ecosystem as Helix presentation aims to explore and profile the nature and dynamics of the Quadruple/Quintuple Helix Innovation System Model or Framework (government, university, industry, civil society, environment) as an enabler and enactor of regional co-opetitive entrepreneurial ecosystems. We conceptualize said ecosystems as fractal, multi-level, multi-modal, multi-nodal, and multi-lateral configurations of dynamic tangible and intangible assets (see the resource-based view of the firm and the new theory of the growth of the firm literature). The concept of multi-level innovation systems is analyzed, taking into account the existence of knowledge clusters and innovation networks. In addition, aggregations of multi-level innovation systems are proposed based on their spatial (geographical) and non-spatial (research-based) functional properties (national, regional, sectoral and local innovation systems).

**Elias Carayannis** is full professor of science, technology, innovation and entrepreneurship, as well as co-founder and co-director of the Global and Entrepreneurial Finance Research Institute (GEFRI) and director of research on science, technology, innovation and entrepreneurship, European Union Research Center, (EURC) at the School of Business of the George Washington University in Washington, D.C. His teaching and research activities focus on the areas of strategic government-university-industry R&D partnerships, technology road-mapping, technology transfer and commercialization, international science and technology policy, technological entrepreneurship and regional economic development.

Dr. Carayannis is engaged with doctoral students and colleagues from around the world in the research areas of Technology Innovation & Entrepreneurship and International Science & Technology Policies and Practices.