

***The Open Innovation Paradigm and  
Strategic Options for  
EU-U.S. Innovation Partnerships***  
**THE FREIE CONCEPT IN THE CONTEXT OF  
OPEN INNOVATION DIPLOMACY**

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**INVITED PRESENTATION**

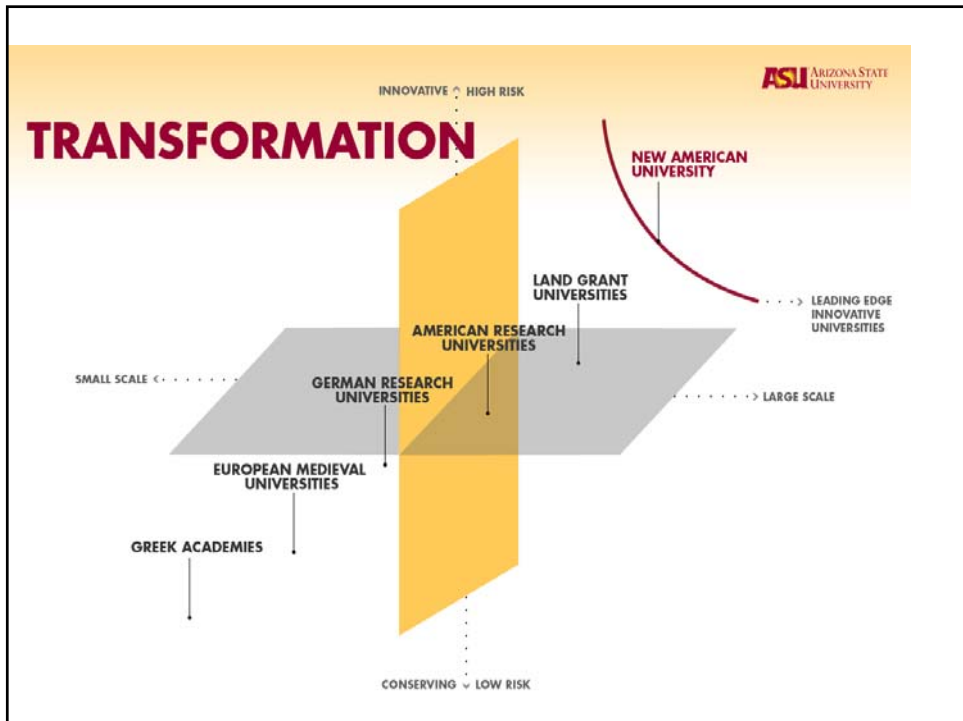
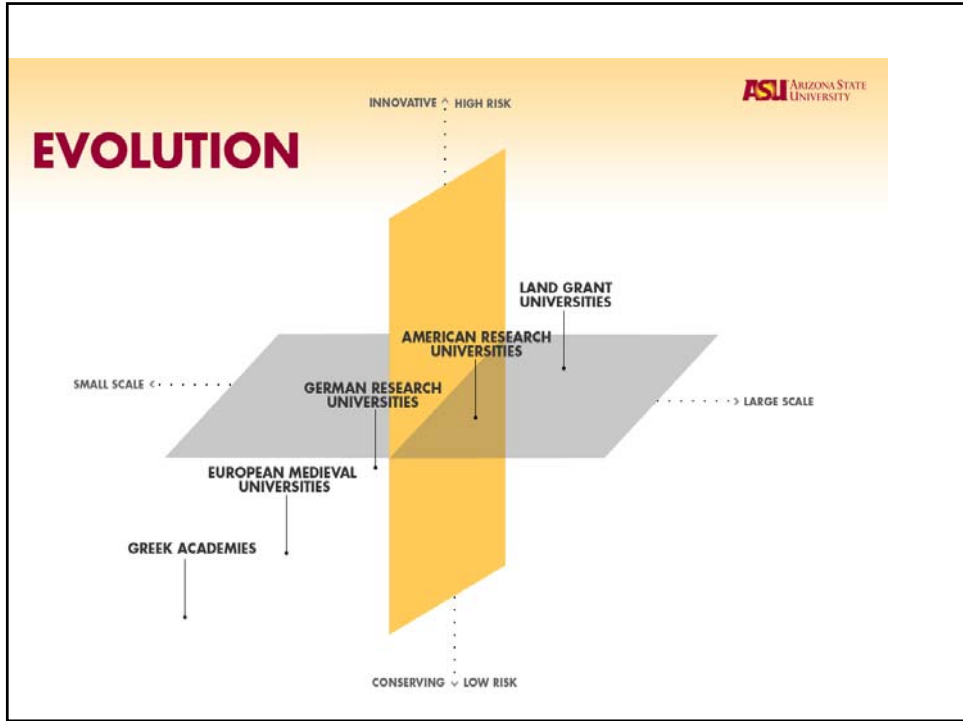
**BILAT 2011 \_ VIENNA AUSTRIA**

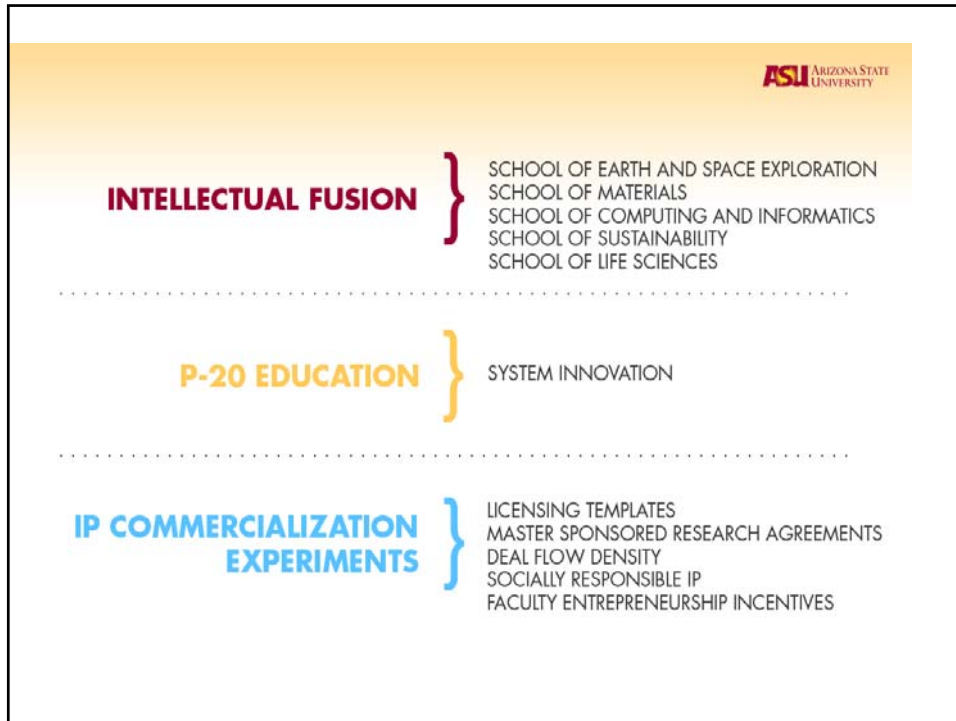
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***EXCERPTED FROM:***

***Carayannis et al, Open Innnovation Diplomacy: Linking Research  
with Development via Entrepreneurship and Innovation  
for Sustainable and Robust Competitiveness and  
Peace through Prosperity, Forthcoming, Springer Journal of the  
Knowledge Economy (JKEC), Spring 2011***

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## Context for the modern universities

- Population growth
- Resource scarcity
- Demography
- Climate Change
- Globalization

 Innovation

## New Disciplines

- Life sciences
- New Material sciences
- Intelligent systems
- Clean Technologies
- Biodiversity



Interdisciplinarity

Slide adapted from GWU presentation by Prof. Dr. Andreas Pinkwart 11/2010

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## Challenges for the universities

- Institutionalization
- Interdisciplinarity
- Innovation
- Infrastructure
- Internationalization

Slide adapted from GWU presentation by Prof. Dr. Andreas Pinkwart 11/2010

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## Principles for Managing modern Universities

- Variability  Bologna process
- Autonomy  Higher educational law
- Competition  Excellence Initiative
- Cooperation  Clusters of Excellence
- Capabilities  Institutional Strategies, Graduate Schools, funding

Slide adapted from GWU presentation by Prof. Dr. Andreas Pinkwart 11/2010

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## ***FREIE and OPEN INNOVATION DIPLOMACY***

***A 21st Century University Model  
in an Open and Fractal Research, Education  
and Innovation Ecosystem (FREIE)  
Perspective:***

***Moving from Tactical Fragmentation to  
Strategic Integration in Europe and Beyond***

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# **FREIE**

## **Fractal Research, Education and Innovation Ecosystem**

### **CONTEXT MATTERS:**

**Institutional, socio-economic, regulatory/legal, socio-technical, and cultural**

### **HORIZON MATTERS:**

**A 5-10 year part of a longer term horizon - short-termism is a substantial risk-factor in policy-making and thus I would like to think generationally in educational matters - for instance, in a "University of Vienna 2050" vision roadmap**

### **POLICY MATTERS:**

**The EU Education Policy 2020 Agenda context, meaning we are thinking on a longer term basis than 5-10 years and on a regional / continental level than a specific university only albeit we do start at the university a pilot case and the first 5-10 years as the pilot implementation phase**

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## **FREIE: KEY CONCEPTS**

- a. "Trans-disciplinarity"**
- b. The "Knowledge of Culture and the Culture of Knowledge"**
- c. The Paradox of "Converging Disciplines and Diverging Specializations"**
- d. Strategic Knowledge Serendipity and Arbitrage**
- e. The notion of "happy accidents"**
- f. "Innovation Diplomacy"**
- g. The "National Brand" concept**
- h. The "Failed Developed State Syndrome"**
- i. The "Mode 3" Knowledge Production Systems Architecture (with embedded higher order technological learning competences**
- j. The need for national, sectoral, and regional "Innovation and Entrepreneurship" networks**
- k. Ministries of Innovation and Entrepreneurship across the EU member countries in the context of the Innovation Union 2020 and the Education Policy 2020 Agenda**

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## **FREIE**

Based on these concepts, I would architect a university as **a flexible, open-learning, open-knowledge and open-innovation ecosystem** that would consist of a network of mutually complementary and reinforcing, **Trans-disciplinary Research, Education and Innovation Centers (TREICs)**.

Each Center would have as its **Charter DNA the Quadruple** (and even Quintuple to encompass the Environmental/Green Imperative) **Innovation Helix Philosophy** and the **Mode 3 Knowledge Production System Competence** and thus they would be organically intertwined with other Government, University, Industry and Civil Society entities locally as well as regionally and globally.

Moreover, I would consider each Center and the University itself as nodes (C-nodes and U-nodes) of a **Fractal** (self-similar and self-organizing via higher order learning processes) **Glocal (Global/Local) Research, Education and Innovation Ecosystem (FREIE)** whose "blood" would be knowledge and its circulation would take place via the pro-active and strategic socio-technologically and/or socio-economically targeted initiatives as well as intentionally triggering "happy accidents" of strategic knowledge serendipity and arbitrage value.

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**Each Center and the University per se would also be considered and leveraged as "Innovation Diplomacy Ambassadors" locally, regionally and globally and this means a cross-cutting and cross-leveraging set of visions, missions, strategies and tactics involving not only the Ministry of Education but also the Ministries of Economy, Development and Innovation and Entrepreneurship as well as the EU Innovation Commission.**

**Since each Center and University in the 21st Century University Model I outlined above would have to be as well as act as an autonomous, essentially self-managing and self-financing on a substantial basis (I would propose a modified Fraunhofer research funding model to fit specific contexts and priorities and with a dynamically adaptive configuration) but also organically and strategically integrated with other Center- and University-nodes part of FREIE**

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## **FREIE**

*I would envision as complementary and reinforcing devices of the knowledge production competence as well as the self-financing of **FREIE a local/global, real.virtual network of Start-up Incubators, Science and Technology Parks and Technology Transfer Offices** attached to each University-node and even Center-node as needed and warranted by size and significance of activities (see Carayannis at al, *Glocal, Real/Virtual Incubator Networks*, 2005).*

*I would like to envision an **EU-wide FREIE** emerging over the next ten years and becoming fully fledged by 2030 to encompass with effective organic links and bilateral as well as flexible, multi-lateral, multi-modal and multi-nodal strategic partnerships (the **FREIE Architectural Blueprint (FREIE AB)** and an evolution / complementary successor to the **BILAT** and **LINK** pilots)*

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## **Words of Wisdom to remember...**

**"The innovator has for enemies all who have done well under the old, and lukewarm defenders in those who may do well under the new law."**

**Nicolò Machiavelli**



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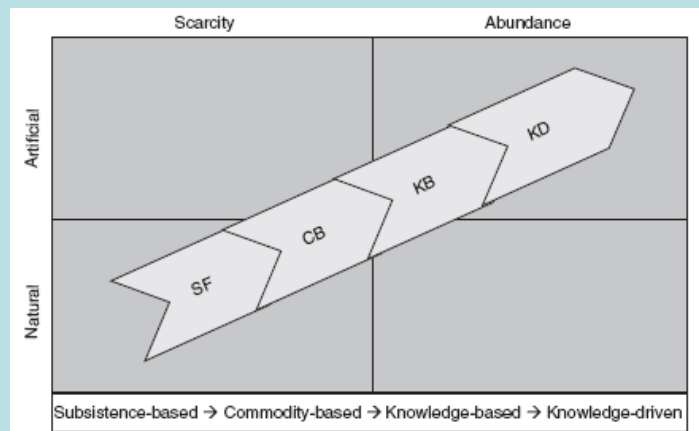


## THE WORLD TODAY:

- A World of **Natural and Artificial** Scarcities
- **Geo-economic vs. Geo-political vs. Geo-technological Multi-polarity vs. Oligo-polarity**
- A World of Divides (**SPECKD** – pronounced “specked”):
  - **Social**
  - **Political**
  - **Economic**
  - **Cultural**
  - **Knowledge**
  - **Digital**
- **Failed and Failing Developing and Developed States...and the SPECKD Fall-out...(for instance, Somalia, Afghanistan, etc..., and Egypt, Tynisia, and Greece, Ireland, Belgium, and so on???)**
- **For that matter, how many countries are China and India really made out of and how will that play out in the years ahead???**
- **Challenges & Opportunities vs. Uncertainties & Risks:**
  - **People, Culture & Technology – Role of Diasporas...**
  - **Dogma vs. Democracy, Tolerance vs. Inclusion**
- **4As & 3Cs:**
  - **Availability, Awareness, Accessibility, Affordability**
  - **Communication, Cooptation, Coordination**

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## FROM SOCIO-ECONOMIC BEING TO TECHNO-ECONOMIC BECOMING



From natural (and/or artificial) scarcity to technology- and knowledge-enabled abundance  
 (Adapted from Carayannis et al, Smart Development, MacMillan, 2005)

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**THE WORLD TODAY IN TERMS OF  
DEVELOPMENT AND SECURITY  
CHALLENGES AND OPPORTUNITIES**

- **SOME KEY ISSUES (FORTHCOMING IN CARAYANNIS ET AL, INNOVATION DIPLOMACY, JOURNAL OF THE KNOWLEDGE ECONOMY, SPRINGER)**
  - **SECURITY THROUGH EQUITY IN DEVELOPMENT AND KNOWLEDGE FOR DEVELOPMENT**
  - **GLOBALIZATION VS. GLOCALIZATION**
  - **GLOCAL KNOWLEDGE SERENDIPITY AND ARBITRAGE**
  - **KNOWLEDGE & ICT FOR DEVELOPMENT**
  - **e-DEVELOPMENT in the KNOWLEDGE ECONOMY**
  - **PROSPERITY FOR PEACE AND PEACE THROUGH PROSPERITY ???**
  - **DEVELOPMENT AS COUNTER-INSURGENT**
  - **DEVELOPMENT AS ANTI-PIRACY**
  - **DEVELOPMENT AS SOCIO-TECHNICAL NETWORKING AND CLUSTERING**

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**EUROPE TODAY: A Social, Political, Economic, and Technological "Snapshot" Or:  
Why Politics & Policy Matter for Innovators**

- **EUROPE AT A CROSS-ROADS:**
  - **GEO-STRATEGIC, GEO-TECHNOLOGICAL, GEO-ECONOMIC AND GEO-POLITICAL (GEO-STEP) ISSUES**
  - **WAR(S) OF STANDARDS (EURO & EURO-FIGHTER)**
  - **WAR(S) OF CULTURES (GIBRALTAR & PARSLEY, JIHAD & McWORLD)**
  - **FEDERALISM VS. NATIONALISM VS. REGIONALISM**
- **CHALLENGES & OPPORTUNITIES: GLOCAL CROSS-ROADS OF PEOPLES, CULTURES, AND TECHNOLOGIES**
  - **PROSPERITY VS. DEMOCRACY**
  - **SECURITY VS. PRIVACY**
  - **SAFETY VS. FREEDOM**
- **INCREASING CONVERGENCE OF STANDARDS AND PLATFORMS –**
  - **LESS DEGREES OF FREEDOM**
- **INCREASING DIVERSITY OF APPLICATIONS AND NEEDS –**
  - **INCREASING COMPLEXITY OF INTER-DEPENDENCIES & VERSATILITY OF SOLUTIONS**
- **SCARCITY OF RESOURCES VS. FUZZINESS OF VISION???**
  - **L'EUROPE DE LARGEUR ET DE PROFONDEUR ??? (INNOVATION UNION 2020)**
  - **AMBIENT INTELLIGENCE SOLUTIONS ???**
  - **SELF-SIMILARITY AT WORK ???**

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## *Key Resources of the Knowledge Economy and Society...*

Adam Smith defined *Land, Labor and Capital* as the key input factors of the economy in the 18<sup>th</sup> century.

Joseph Schumpeter added *Technology and Entrepreneurship* as two more key input factors in the early 20<sup>th</sup> century

In the late 20<sup>th</sup> and the beginning of the 21<sup>st</sup> century, numerous scholars and practitioners such as Peter Drucker, have identified *Knowledge* as perhaps the sixth and most important key input and output factor of economic activity.

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## *INNOVATION DEFINED*

• *Innovation resides at the intersection of invention and insight, leading to the creation of social and economic value*

• *US National Innovation Initiative*



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## INNOVATION DIPLOMACY DEFINED

• *Innovation Diplomacy encompasses the concept and practice of bridging distance and other divides (cultural, socio-economic, technological, etc) with focused and properly targeted initiatives to connect ideas and solutions with markets and investors ready to appreciate them and nurture them to their full potential (Carayannis et al, JKEC, 2011).*



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## INNOVATION DIPLOMACY DEFINED

• *Innovation Diplomacy is in effect “conducting and promoting peace – and not war – with entrepreneurship and innovation means, and in this manner unleashing and helping realize the creative potential and aspirations of people around the world so that markets will serve society and society individual to the fullest possible extent” (Carayannis et al, JKEC, 2011).*



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## INNOVATION DIPLOMACY DEFINED

• *Innovation Diplomacy leverages Entrepreneurship and Innovation as key drivers, catalysts and accelerators of economic development and envisions in particular the development of efforts and initiatives along the following axes concerning in particular socio-economic condition and dynamics of a country and region:*

- *1. Re-engineer mindsets, attitudes and behaviors*
- *2. Engage in sustained, succinct and effective dialog with stakeholders and policy makers*
- *3. Identify, network and engage purposefully and effectively with the related Diaspora professional and social networks around the world*

• *Innovation Diplomacy may have a strong positive effect on the National "Brand-name" thus enhancing geo-economically, geo-politically and geo-technologically the position of a country (for instance, reducing cost of borrowing, providing more effective leverage in traditional diplomacy initiatives, etc)*

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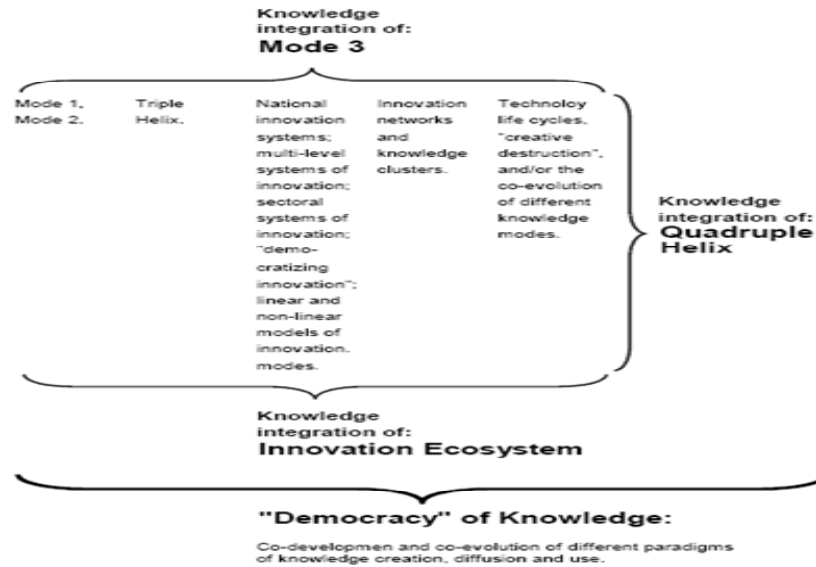
## 21ST CENTURY INNOVATION ECOSYSTEM

(Carayannis, Diversity in the Knowledge Economy and Society, Edward Elgar, May 2008)

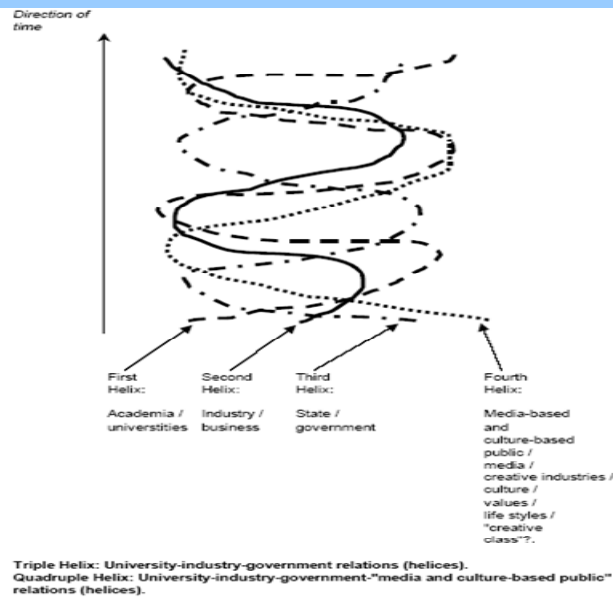
- *A 21st Century Innovation Ecosystem is a multi-level, multi-modal, multi-nodal and multi-agent system of systems.*
- *The constituent systems consist of innovation meta-networks (networks of innovation networks and knowledge clusters) and knowledge meta-clusters (clusters of innovation networks and knowledge clusters) as building blocks and organized in a self-referential or chaotic fractal (Gleick, 1987) knowledge and innovation architecture (Carayannis, 2001), which in turn constitute agglomerations of human, social, intellectual and financial capital stocks and flows as well as cultural and technological artifacts and modalities, continually co-evolving, co-specializing, and co-opeting.*
- *These innovation networks and knowledge clusters also form, re-form and dissolve within diverse institutional, political, technological and socio-economic domains including Government, University, Industry, Non-governmental Organizations and involving Information and Communication Technologies, Biotechnologies, Advanced Materials, Nanotechnologies and Next Generation Energy Technologies (see Innovation Cube)*
- *Sustainable Entrepreneurship and Robust Competitiveness (Carayannis, 2008) can only exist in a Democratic Society and Polity balancing openness and participation with creativity and innovation...(see Mode 3 and Quadruple Helix – Carayannis et al, 2008)*
- *DEMOCRATIC CAPITALISM (CARAYANNIS, 2009).*

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## MODE 3 KNOWLEDGE INTEGRATION (VS. MODE 1 AND MODE 2)



## QUADRUPLE HELIX CONCEPT



**FROM TACTICAL FRAGMENTATION  
TO STRATEGIC INTEGRATION:  
The Pieces Must Fit Together –  
“Mode 3” Knowledge Production System for  
Innovation and Entrepreneurship**

**Innovation**

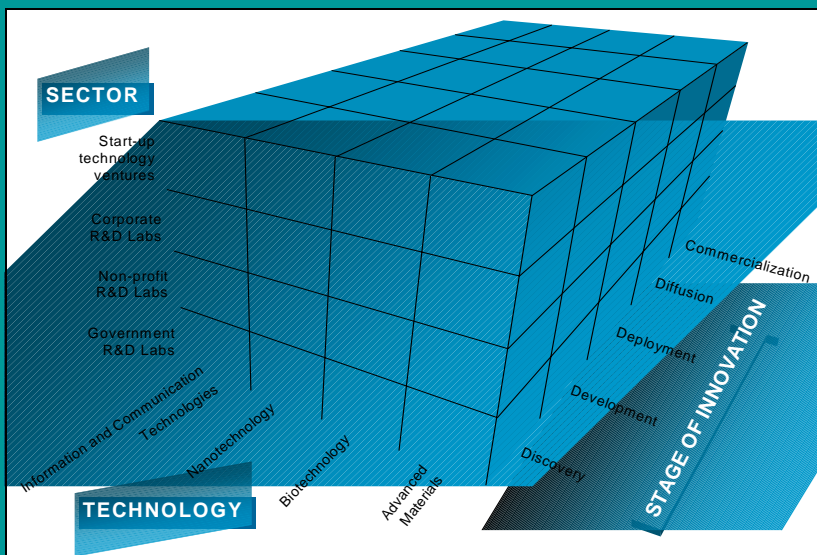


**Entrepreneurship**

**Quadruple Helix:  
Government-University-Industry-Civil Society/Creative Media**

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**THE INNOVATION CUBE**



Source: Adapted from Elias G. Carayannis, GWU Lectures and in print, 2005

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## **Open Innovation Diplomacy: The Road Ahead**

- **SHAPING MINDS AND BUILDING LEADERSHIP CAPACITY: THE ROLE OF UNIVERSITIES IN BREEDING WORLDCLASS ENTREPRENEURS ACROSS THE DISCIPLINES AS INNOVATION DIPLOMATS – WHAT, HOW, WHY, WHEN, WHO**
- **R&D, ENTREPRENEURSHIP AND INNOVATION CHALLENGES AND OPPORTUNITIES**
- **STRATEGIES TO ESTABLISH AND EXPAND S&T PARKS & INCUBATORS AS KEY ELEMENTS OF GLOCAL INNOVATION NETWORKS AND KNOWLEDGE CLUSTERS INFRA-STRUCTURE –**
  - **High Tech Associations, Technopoleis, Innovation Zones, Poles and Networks and Knowledge Clusters**
  - **INNOVATION BOTTLENECKS AND FAILURES OF COURAGE AND IMAGINATION**
  - **CRITICAL SUCCESS AND FAILURE FACTORS AND LESSONS LEARNED**

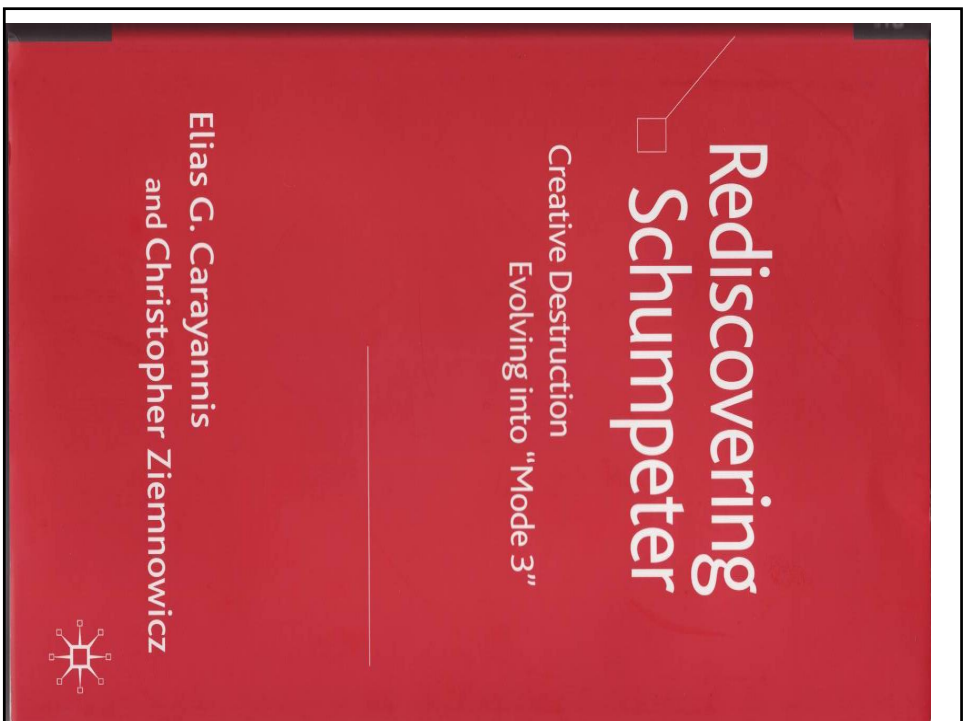
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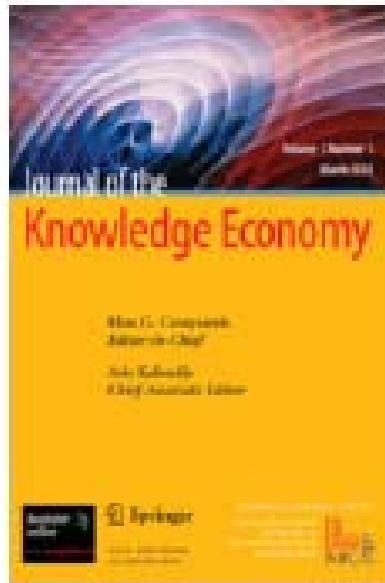
She – she !!! 😊



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