KNOWLEDGE FOR DEVELOPMENT VISION 2030 (K4Dev_VISION 2030): A SYSTEMS APPROACH WITH A FOCUS ON SMART GROWTH

CHALLENGES AND OPPORTUNITIES FOR THEORY, POLICY AND PRACTICE

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INVITED KEYNOTE SPEECH ABSTRACT

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At the end of WWI (a century ago), President Wilson framed the vision to "*make the world safe for democracy*". A century later and fifteen years after 091101, the Arab Spring events and side-effects (such as the Syrian conflict and even ISIS) demonstrated the need to "*make democracy safe for the world*". The future and sustained peace, prosperity and security of the WORLD require that we pursue and accomplish a reasonable modicum of BOTH of those visions and Knowledge for Development (K4Dev) and its related proposed roadmap (K4Dev__Vision 2030) based on the concepts of Glocal (Global/Local) Network of Real and Virtual Incubators (G_RVIN) (Carayannis et al, 2005) as well as the concepts of Strategic Knowledge Arbitrage and Serendipity (SKARSE ©) plays a central role in this set of challenges and opportunities.

The emerging ***gloCalising*** (globalizing-localizing) frontier of converging systems, networks and sectors of innovation that is driven by increasingly complex, non-linear, and dynamic processes of knowledge creation, diffusion and use, confronts us with the need to re-conceptualize, if not to re-invent, the ways and means that knowledge production, utilization and renewal takes place in the context of the knowledge economy and society.

Perspectives from and about different parts of the world and diverse human, socio-economic, technological and cultural contexts are interwoven to produce an emerging new worldview on how specialized knowledge, that is embedded in a particular socio-technical context, can serve as the unit of reference for stocks and flows of a hybrid, public/private, tacit/codified, tangible/virtual good, that represents the building block of knowledge economy, society, and policy. Carayannis (2001 and 2005) argues that the *"Mode 3"* model is the knowledge production system architecture that engages actively higher order learning (learning, learning to learn, learning to learn how to learn), in a multi-lateral, multi-nodal, multi-modal and multi-layered manner involving thus entities from government, academia, industry and civil-society, as well as driving ***co-opetition (competition-cooperation), co-specialization and co-evolution*** resource generation, allocation and appropriation processes (***C3***) that result in the formation of modalities such as innovation networks and knowledge clusters (Figure 1).

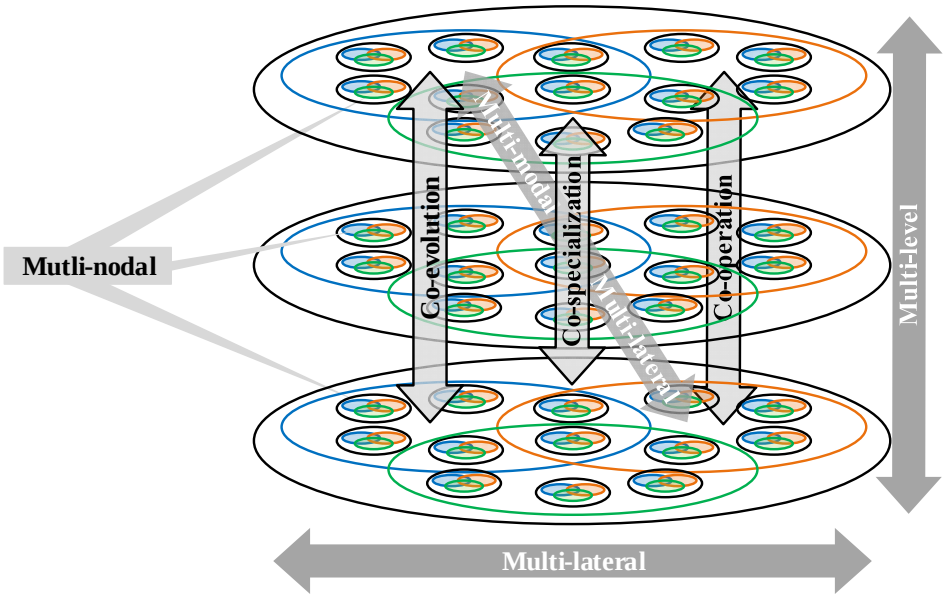

Figure 1. Strategic knowledge, serendipity and arbitrage: multi-modal, multi-nodal, multi-lateral, multi-level C3 processes (Carayannis, E.G., GWU Lectures and Journal Publications, 2001-2017)

Strategic Knowledge Arbitrage and Serendipity (*SKARSE* ©) are real option drivers of K4Dev that drive the C3 (see above). Strategic knowledge serendipity refers to the unintended benefits of enabling knowledge to 'spill over' between employees, groups and functional domains ***("happy accidents" in learning)***. More specifically, it describes the capacity to identify, recognize, access and integrate knowledge assets more effectively and efficiently to derive, develop and capture non-appropriable, defensible, sustainable and scalable pecuniary benefits, while Strategic knowledge arbitrage refers to the ability to distribute and use specific knowledge for applications other than the intended topic area. It refers to the capacity to create, identify, reallocate and recombine knowledge assets more effectively and efficiently to derive, develop and capture non-appropriable, defensible, sustainable and scalable pecuniary benefits.

To operationalize the K4Dev_VISION 2030, we propose a set of initiatives and policies supporting smart, sustainable and inclusive growth via social innovation and leveraging social media modalities such as ***Crowd-Sourcing, Crowd-Funding and Crowd-Storming*** in complementarity to and synergistically with other broader initiatives. These initiatives and policies would be focused primarily but not exclusively at the places where most of the Earth's population is accumulating, namely Cities, aiming to transform as many of these urban locales and as profoundly as possible into "***Smart Cities***" organized around the concepts outlined above and especially based on the ***Quadruple and Quintuple Innovation Helix models*** (Carayannis et al, 2003 to 2016) which empower Civil Society on a Triple-Bottom-Line-centric basis (ie Environmentally, Financially and Socially sustainable manner).

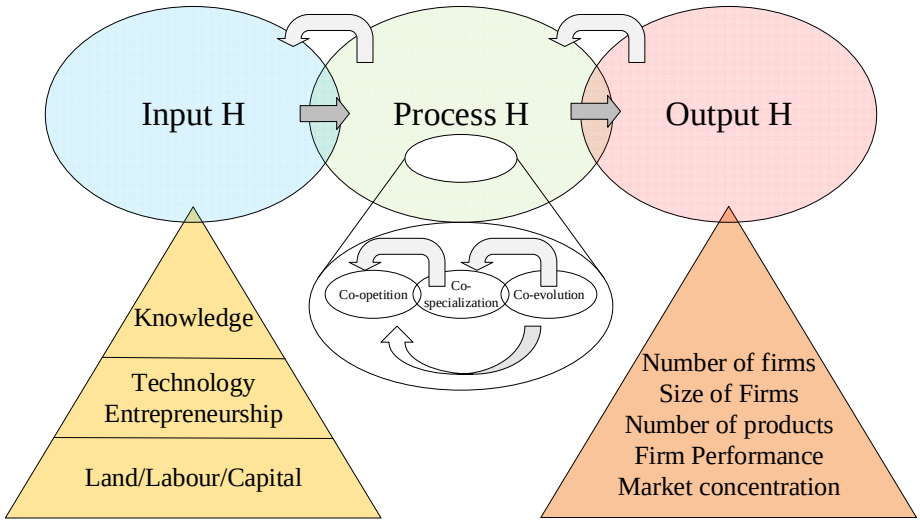

Figure 2. Heterogeneity Dynamics – Input, Process, Output (Carayannis and Provance, 2008)

The ***Quadruple Innovation Helix*** (see Figure 3) bridges social ecology with knowledge production (Mode 3) and innovation. The most important constituent element of the quadruple helix – apart from the active "human agents" – is the resource of knowledge, which through a circulation known as circulation of knowledge, between social subsystems, changes to innovation and know-how in a society and for the economy. The Quadruple helix, thereby, visualizes the collective interaction and exchange of knowledge in a state by means of the following four subsystems:

- Education System in reference to academia, universities, higher education systems and schools (human capital) (**UNIVERSITY SECTOR**)
- Economic System consists of industry/industries, firms, services and banks (economic capital) (**INDUSTRY SECTOR**)

- Political System it formulates the direction of where the state/country is heading in the present and future, laws etc. (political and legal capital) (**GOVERNMENT SECTOR**)
- Civil Society (Media based-Culture based integrates and combines two forms of capital: culture based public - tradition values etc. (social capital) and media based public - television internet newspapers (capital of information) (**CIVIL SOCIETY SECTOR**)

Quadruple Innovation Helix models place a stronger focus on cooperation in innovation, and in particular, the dynamically intertwined processes of coopetition, coevolution and co-specialization, within and across regional and sectoral innovation ecosystems that could serve as the foundation for diverse smart specialization strategies. The European Commission RIS3 guide outlines a set of general principles as to how S3 strategies should be developed at the regional level and recognizes the significance and need for the Quadruple Innovation Helix approach by proposing to add a fourth group to a classical Triple Helix model. ***The Quintuple Innovation Helix complements the Quadruple Innovation Helix by adding the (natural) Environment as the fifth dimension and ensuring the sustainability of any bottom-up initiatives and top-down policies*** (see Figure 3). Moreover, the Quadruple / Quintuple Innovation Helix model puts innovation users at its heart and encourages the development of innovations that are pertinent for users (civil society). Users or citizens here own and drive the innovation processes which is the essence of ***Social Innovation and in fact Sustainable Social Innovation bottom-up initiatives and top-down policies and practices.***

Related initiatives, policies and practices that could enact and enable the K4Dev_Vision 2030 Roadmap we propose, could encompass networked, global/local, micro-enterprise and SME formation and growth as well diaspora, refugees, and inner city projects via the Crowd-Storming, Crowd-Sourcing and Crowd-Funding modalities as well as the engagement of all sectors of the Quadruple Innovation Helix Model within the overarching Quintuple Innovation Helix sustainability framework (see Figure 4 below as a conceptual reference model as well as the closing questions from the same 2005 book that remain valid today as they were more than ten years ago (Carayannis and Sipp, Smart Development, Palgrave, 2005):

- Should a developing economy adopt a development pathway that aims at fulfilling the macro level development objectives and goals (following the transitioning economies' example), or ***would it be "smarter" for the developing economy in question to focus on fulfilling the meso level development objectives and goals?***
- In the case where the meso level focus is chosen, ***could this approach lead the developing country to "skip" the transitioning stage "leap-frogging" towards developed economy status and what, if any, trade-offs might there b***e (including the risk of technological, socio-economic, and even cultural divides forming within a country as a result of a potentially uneven and unbalanced, accelerated development)? Moreover, ***what would the implications be for how the developmental stage of countries is defined and enacted?***
- ***Could such accelerated development trajectories necessitate the re-definition of what a transitioning economy is and could such a re-assessment and re-definition of objectives and goals lead to a "smarter" approach to development*** (by enabling more functional congruence between development conditions on the ground and development goals and objectives in the numerous reports of the MDAs and the MDGs)?

Figure 3

The Quadruple / Quintuple Innovation Helix (Government, University, Industry, Civil Society, Environment)

(Carayannis et al, 2006, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017)

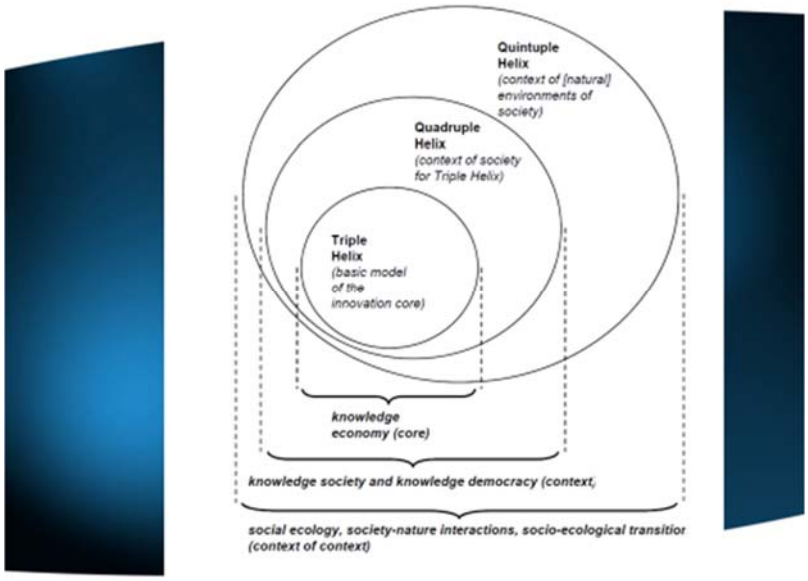

Figure 4

Dynamic Cube of e-Development Intervention Strategies

Three Dimensions of Analysis of e-Development in the Knowledge Economy

(Carayannis et al, Smart Development, 2005)