THE TRIPLE HELIX ASSOCIATION NEWSLETTER

www.triplehelixassociation.org

Hélice

VOLUME 2 ISSUE 3 SEPTEMBER 2013

EDITORIAL WELCOME

Autumn Greetings!

With the advent of the new academic year we welcome you to the Autumn issue of the Triple Helix Association Newsletter - *Hélice*.

In this issue we present interesting articles on the application and utilization of the Triple Helix model in different national and policy contexts.

The Triple Helix has been a popular concept amongst academics, policy-makers, and practitioners, for the framing of university, industry, and government relations in a simple and straightforward way. While it is indeed true that the innovation process is very complex, evolution over time due to the complicated relationship between multiple variables and inputs, the interactions between university, industry, and government, remain the kernel elements of any innovation policy and process.

We discuss the Triple Helix theme by presenting papers on ***A Sleeping Giant: the Triple Helix Approach for effective International Cooperation for Development*** (Danilo Piaggesi, Dianne Davis, and Walter Castlenovo); ***Ecosystems of Triple Collaboration*** (Gote Nyman); ***The University in National Development: theoretical perspectives on a Second Academic Transformation, linked to a Third Capitalist Industrial Revolution and the 'Missing' Idea of a Quadruple Helix*** (David Cooper), and ***Indonesia International Institute for Life-Sciences: i3L*** (Niclas Adler). We would like to thank the authors for their thought-provoking contributions.

In President's Corner, Henry Etzkowitz together with Emanuela Todeva further discuss the evolution of the Triple Helix and its intellectual basis, through their article entitled: ***The Triple Helix as a Highly Charged Intellectual Enterprise***.

We encourage you to share your reflections with the authors, and help sustain and extend the innovative dialogue in *Hélice*.

With the imminent publication of the '***Triple Helix Journal***' (THJ) in 2014 by *Springer Open,* covering University-Industry-Government Innovation and Entrepreneur ship, we have pleasure in announcing a 'Call for Papers' for [a] the **Inaugural Issue** on Innovation's Future, and [b] a **Special Issue** on The Spatial Dimension of Innovation: Triple Helix and the City.

The procedure for the forthcoming Triple Helix Association Election of Officers is also published here. All THA members are reminded that they should cast their vote during the voting period. Voting will be conducted via the Internet from 1-15 November 2013.

London was the venue for the XIth International Triple Helix Association Conference held from 7-10 July 2013, with the theme 'The Triple Helix in a Context of Global Change: Continuing, Mutating or Unravelling? The event proved to be yet another interesting and informative meeting. We would like to thank the organizers, and all those who participated in the Conference. As the next issue of *Hélice* will be dedicated to the London Conference, we invite your contributions on the subject.

For further information, or for publishing in *Hélice,* please contact Devrim Göktepe-Hultén at devrimgoktepe@gmail.com, or Sheila Forbes at sheila.forbes@strath.ac.uk.

We wish you a successful academic year and a warm and colourful autumn.

Devrim Goktepe-Hulten
(Editor in Chief)
and
Sheila Forbes
(Managing Editor)

September 2013

THA Newsletter - *Hélice*

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Volume 2, Issue 3, September 2013

The Triple Helix Newsletter, *Hélice*, will be published quarterly - March, June, September and December. Contributions, articles, news or announcements, should be sent to:

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Deadline for inclusion in December 2013 issue: **15 November 2013**

THA Executive Committee Minutes

Sunday July 7th 2013

1000 –1200

The Boardroom, The Work Foundation, 21 Palmer Street, London SW1H 0AD

THA Executive Committee

Henry Etzkowitz	THA President. Present
Loet Leydesdorff	THA Vice-President, Present
Jose Manuel Carvalho de Melho	THA Vice President and Chair of Awards Committee, Present
Mats Benner	Absent
Devrim Goktepe-Hulten	Editor-in-Chief, THA Newsletter Helice, Absent
Han Woo Park	Absent
Riccardo Viale	Absent
Poh Kam Wong	Absent
Girma Zawdie	Absent
Daniela Italia	THA Secretary General, Present
Christiane Gebhardt	THA Auditor and Chair of Journal Committee

Invited appointed officials:

Tariq Durrani	Chair, THA Meetings Committee, Present
Marina Ranga	Chair, THA Membership Committee, Present
Sheila Forbes	Managing Editor, THA Newsletter Helice, Present
Evgeniy Perevodchikov	THA Marketing Director, Present
Anne Rocha Perrazo	Managing Editor, THJ, Absent

The following people also attended the meeting upon invitation: Alexander Uvarov, THA Ambassador and President of the THA Russia Chapter (invited by Tariq Durrani to present an overview of preparations for the next TH conference in Tomsk, 2014); Emanuela Todeva, Associate Professor at Surrey University (invited by Henry Etzkowitz as Researcher on THA Organizational Process); and Yuri from TUSUR, to video record the meeting. Andrzej Jasinski, member of the Membership Committee, and Marcelo Amaral, member of the Meetings Committee, also joined the last part of the meeting.

Agenda of the Meeting

1. Report from the THA President
2. Reports from the THA Committee Chairs:
   - Awards Committee - Jose Manuel Carvalho de Mello
   - Journal Committee - Christiane Gebhardt
   - Future Meetings Committee -Tariq Durrani
   - Membership and Strategy Committee - Marina Ranga
3. Report from the Helice Newsletter Editors - Devrim Goktepe-Hulten and Sheila Forbes
4. Report from the THA Marketing Director - Evgeniy Perevodchikov
5. Election Procedure

PLEASE NOTE THAT ALL ANNEXES MENTIONED IN THESE MINUTES ARE AVAILABLE ON THE THA WEBSITE

1. Report from the THA President (see Annex 1)

Henry Etzkowitz, announced the THA Afternoon, a pre-meeting event at the Oxford and Cambridge Club, to be held on Sunday 7 July 2013, 3.00-6.00pm, hosted by the President, with a Triple Helix Master Class by Henry Etzkowitz and Loet Leydesdorff, an Inter-Society Workshop between THA and UINN Societies on University Business Cooperation Research Projects, US and Europe, to be followed by a Champagne Reception for THA members and friends. It is intended that this event be the start of a tradition to provide the THA with a more significant role in annual meetings, as a compromise between in-sourcing bi-yearly and outsourcing totally. The afternoon event may be extended to a longer all-day event in the future. A sub-committee of the Meetings Committee (to be appointed), will take on this task in the future. Volunteers welcome!

Devrim Goktepe-Hulten's idea for a PhD training event before or following the meet was also noted. It was suggested that she Chair a Sub-committee of the Meetings Committee, together with Marcelo Amaral to organize this event. Appreciate acceptance by 1 September 2013.

2.

NB. Executive Committee Members: Please forward your vote on the two motions below to Daniela at info@triplehelixassociation.org (can be done by returning this document to her).

Motion 1: For Executive Committee Vote

The President proposed that only Executive Board members may propose motions. There shall be a ten day discussion and voting period via the Internet during which time members may change their votes. The Secretary General shall certify and announce the final result. The proposer amended the motion to allow motions to be passed on fast track by unanimous vote of the Executive Committee

Yea _____ Nay _____ Abstain _____

Motion 2: For Executive Committee Vote

The President proposed a THA Election Procedure (for those positions not filled by the Founding Members Election Procedure, to include: following close of Voting Roll on 31 September 2013, and certification of members by the Secretary General:

15 day Nomination Period:	President's slate to be offered and individual nominations and self-nominations welcome. (1-15 October 2013)
15 day Election Period:	Candidates statements to be invited for placement on members section of THA website and to be distributed by the Secretary General in a file sent to the membership and/or members only special edition of Helice (15-30 October 2013)
15 day Voting Period:	Over the Internet as called for by the THA Statutes (1-15 November 2013)
Certification of Results:	By the THA Attorney (16-21 November 2013)
Results to be announced:	By Secretary General 22 November 2013)

Yea _____ Nay _____ Abstain _____

Reports from the THA Committee Chairs:

2.1 Report of the Award Committee (Jose Manuel Carvalho de Mello) - see Annex 2

The Chair of the Awards Committee detailed the structure of the Awards Committee and the procedure followed to select the winner of the Best Student Paper Award. He mentioned that the Award will be handed to the winner at the TH conference dinner. The granting of the Best Student Paper Award will be continued at future conferences.

2.2 Report of the Journal Committee (Henry Etzkowitz and Christiane Gebhardt) - see Annex 3

Springer will launch the THA journal under the title "Triple Helix: A Journal of University-Industry-Government Innovation and Entrepreneurship" (THJ). Contractual arrangements have been successfully concluded between the THA and SPRINGER to publish the English version of the journal, and between the THA and TUSUR University, Tomsk, to publish a Russian version.

The journal will be launched in July 2014 as a double open access on-line publication, free to both readers and authors, in order to enhance accessibility of Triple Helix and Innovation scholarship. The authors´ fee is paid by THA and authors will retain IPR. THJ abstracts will appear with each article in the five official United Nations languages as well as Portuguese. The design of the Journal's look is underway and will be displayed on the THA website as soon as available. A negotiation for significant artwork exemplifying the Triple Helix for the THJ "cover" is underway with the Foundation holding the artist's rights. (Additional remark HE 08/13/13)

There will be a marketing campaign and an open Call for Papers for the Inaugural Issue, which will focus on the theme "Innovation's Future". The journal is financed neither by membership fees nor by conference fees, but from separate funding provided by TUSUR University for five years, with an option for a second five year period, without liability threats to the THA.

Henry Etzkowitz has accepted to serve as Acting Editor-in-Chief; Christiane Gebhardt, Chair of the THA Journal Committee; Riccardo Viale, Editor of Mind and Society; Chunyan Zhou, Editor of the Journal of Knowledge Innovation in China; and Loet Leydesdorff, co-founder of the Triple Helix movement, have agreed to be Associate Editors.

Anne Rocha Perazzo, Editor-in-Chief of Social Science Information (Paris) has accepted to be THJ's Managing Editor starting her assignment in the 1st of September 2013.

Members of the current THA Executive Committee have been invited to serve on the Editorial Board. Han Woo Park and Jose Manuel Carvalho de Melho have accepted to date.

Hebe Vessuri and Carlota Perez have accepted invitations to be founding members of the Distinguished Advisory Board

More than twenty leading innovation scholars and practitioners have accepted invitations made in 2011 to become members of THJ's Editorial Advisory Board, covering a broad range of subject matters and geographical areas. They will be available to offer occasional mentoring to prospective authors as part of their remit. A "Junior" Editorial Board is also "in organization" with the initial invitee, the winner of the Bandung THX Student Best Paper competition, to be followed by the winner of the London Best Student Paper Award.

Open Points:

- There must be a decision on the logo (Springer sent proposals) by the President and Managing Editor
- Anne Rocha Perazzo contract has to be finalized. She will start September 1. 2013. (Additional remark GC: contract was finalized on July 19th 2013)
- Henry Etzkowitz will write a Call for the Inaugural Issue of the journal by September 2013 (cc Perazzo).
- Christiane Gebhardt will write a Call for another Special Issue of THJ on the "Triple Helix and the City" by September 2013 (cc Perazzo).
- Working Paper Series (WPS) - Professor James Dzisah was thanked for inaugurating the WPS upon resignation as Founding Editor. Dr Emanuella Todeva has accepted to be Editor. Dr Lucy Lu, has been invited as Associate Editor. (Additional remark HE 08/13/13)

2.3 Report of the Future Meetings Committee (Tariq Durrani)

The Chair of the Future Meetings Committee had invited Brigitte Andersen, the chief organizer of the THXI Conference in London 2013 to provide an overview of this conference, and Alexander Uvarov, the Chief organizer of the THXII conference in Tomsk 2014 about the on-going preparations for this conference. Tariq Durrani informed that a questionnaire would be handed out to delegates at the end of conference to collect their views on how to maintain and improve the quality of the conferences.

The issue of the frequency of the THA conference was discussed, i.e. whether the THA should continue organizing the conference annually, or revert to the bi-annual format that used to be in place before 2009. The consensus was to keep the annual conference, in order to maintain the current momentum and interest for organizing these conferences in different countries, especially to foster the development of the Triple Helix where conferences have not yet been held.

NB. An Interface Group from the THA to the Tomsk Local Organizing Committee has been established, chaired by Tariq Durrani with Shelia Forbes and Emanuella Todeva as members, and Henry Etzkowitz ex officio.

2.4 Report of the Membership and Strategy Committee (Marina Ranga) - see Annex 4

Membership

The Membership and Strategy Committee (MSC) initiated several initiatives to attract new members:

(a) The offer of three free registrations at the THXI Conference in London to new members was successful. As a result, 23 members joined the THA until 15 March 2013 - an increase of nearly 50% in THA membership, which went up to 74 people.
(b) The introduction of a new membership incentive: a ten per cent discount for THA members in the registration fee for TH conferences, starting from 2014.
(c) Simplification of the fee collection procedure and the issuing of membership certificates.

Open Points:

- The introduction of the ten per cent discounted fee for THA members in the MOU between THA and TUSUR University as organizer of the TH conference 2014 in Tomsk.
- Introduction of the on-line registration and monitoring of THA membership, including first registration and renewal of registration, and collection of membership statistics.

Strategy: Creation of new THA Chapters

The creation of new THA Chapters and the monitoring of existing ones is a key activity of the MSC, and one that receives a significant amount of attention and effort from the MSC members.

THA Chapter Russia: the proposal for a THA Chapter in Russia coordinated by TUSUR University, Tomsk, was approved in September 2012, and the development of the Chapter is underway.
THA Chapter Brazil: an application for a THA Chapter in Brazil coordinated by ANPROTEC was submitted in March 2013 to the MSC, and was approved in July 2013.
THA Chapter Greece: an application for a THA Chapter in Greece coordinated by the South East European Research Centre (SEERC) of the University of Sheffield CITY College in Thessaloniki was received on 5 July 2013, and is now under evaluation by the MSC members.
THA Chapter Mexico: an application for a THA Chapter in Mexico is under preparation by a group of colleagues from two universities in the North and South of Mexico. We expect a submission soon.

Other THA Chapters: interest has been expressed for the creation of THA Chapters in Portugal, Peru, Poland, Pakistan, and Hungary.

Open Points:

- A set of guidelines for the mid-term and end-term evaluation of the activity of THA Chapters will be produced by the MSC.
- Proposals for further THA Ambassadors are under discussion and will be submitted to the Executive Committee in the near future.
- MSC enlargement in view of better geographic and institutional coverage. Targeted regions are North America (the US and Mexico), Eastern Europe, Africa, and South-East Asia.
- The creation of a platform for dialogue with the business community, the entrepreneurial community, and regional and national policy-makers.
- For the implementation of these and other activities aimed to enhance THA membership, the MSC proposed the establishment of an annual THA budget, which would include a share allocated to membership enhancement activities as appropriate to their scope. The MSC will provide an estimate of this share in the near future.
- Introduction of a bonus for the countries that host a THA Chapter making applications to host future THA conferences to be discussed with the Future Meetings Committee.

2. Report of the Helice Newsletter Editors (Devrim Goktepe Hulten and Sheila Forbes) - See Annex 5

There have been six issues of the Hélice published to date. Each issue has had a different focus, and this year has included:

July 2012	General Scientific Papers
October 2012	TH Conference Report, Bandung 2012
March 2013	Special Issue on Brazil
June 2013	Entrepreneurial Universities

Mariza Almeida has been appointed as Book Review Editor.

With regard to the issue of the Helice translation into other languages than English, which is currently a THA Platinum organizational membership benefit (i.e. upon payment of a membership fee of EUR 5,000+), the THA President granted this organizational benefit to

TUSUR University, which is a regular institutional member (i.e. membership fee of EUR 200), and exempted TUSUR of the obligation to pay the Platinum membership fee for one year on the condition that payment, at the platinum level commence the following year. Thus, having agreed, with expression of thanks, TUSUR has been allowed to translate Helice into Russian and upload the Russian version on the website. A similar incentive may be made available to other chapters that wish to translate Helice.

Open Point:

- Helice editors will propose additional features for expansion of the Quarterly publication.

4. Report from the THA Marketing Director (Evgeniy Perevodchikov) - see Annex 6

Evgeniy Perevodchikov discussed the need for improvements in the TH website and the possibilities of developing an interactive website for the recruitment and retention of members in the individual or institutional sector as well as for sponsors. An edited and curated monthly, bi-weekly, and/or continuously updated edited news of members activities may be introduced as part of a Members section of the website.

Evgeniy Perevodchikov will work with Sasha Baksht and Emanuella Todeva, Director of Organizational Design and Research, to develop. Initial implementation is expected by1 September 2013. (Additional remark HE 08/13/13)

He also referred to the preparations for THXI in Tomsk. MoU for THXII signed by Henry for THA, and Alex for TUSUR, Wednesday 12 July, 2013. (Additional remark HE 08/13/13)

5. Elections Procedure

The Secretary General will organise and supervise the conduct of the elections according to the motion above.

GC and MR: 20.07.2013
HE: 13.08.2013

PRESIDENT'S CORNER

THE TRIPLE HELIX AS A HIGHLY CHARGED INTELLECTUAL ENTERPRISE

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INTRODUCTION

The Triple Helix Association's recent practice of out-sourcing conference management to external, as well as internal, groups has brought new resources, ideas and people into the Triple Helix orbit, but the downside may be a loss of focus.

The recent London conference was broadly framed to include the unravelling of the Helix but the actual intended theme, announced in a "provocation piece" released just before the meet was "Open Innovation" (Andersen and Hutton, 2013). While an exploration of the contradictions between the Triple Helix (university-industry-government) and Open Innovation firm centred models could have been enlightening and productive, the encounter at the meet was mostly accidental and "off the cuff" albeit with notable exceptions such as a paper that directly treated the confrontation and confluence between the two models (Vanderslott, 2013).

Due to the late transition from hidden to open agenda, an intellectual opportunity was mostly missed. Apparently, prospective meeting bidders have the impression that they must at least appear to hew closely to a triple helix "party line" in order for their bid to succeed, and thus only reveal their true intent later. If this is the case, it is counterproductive to the intent of the conference series and we may consider ways of broadening its intellectual reach. In the future we might encourage joint framing committees for bids together with representatives of alternative innovation perspectives, as well as joint meetings with sister societies, in order to encourage cross-fertilization and debate.

Although we have invited leading representatives of alternative perspectives, like Paul David at THV Torino, to keynote plenary sessions, a more thoroughgoing encounter among innovation models may be an exciting objective. The inaugural issue of the Triple Helix Journal, inviting representatives of diverse perspectives to consider Innovation's Future (See Call, p32 this issue) is one step in this direction. At the same time, following more than two decades of development, a systematic consideration of the development of Triple Helix may also be instructive.

EVOLUTION OF THE TRIPLE HELIX

The evolution of the Triple Helix concept has intensified over the last years through more regular meetings and events around the world. The conference has changed from a bi-annual meeting to an annual set of multiple meetings and workshops attracting academics, business practitioners, and government officials. The concept and the metaphor of Triple Helix have gained an official recognition by international institutions such as the OECD and the European Commission, although not always with appropriate attribution. This utilization without citation indicates that Triple Helix is being "kleenexed," becoming as ubiquitous as the facial tissue that lost the right to protect its name.

This momentum has marked a transition from national innovation policy instruments, to supra-national programs that generate incentives to public and private service providers, firms and universities to engage in collaborative initiatives across borders. The nation-state as the locus of innovation policy and practice or national system of innovation (NSI) model derived by Freeman (1988) from early post-war Japanese experience of "dual helix" government steering of industrial development and firm selection, subsequently became the leading global innovation policy concept. This instrument has itself devolved into regional, local and technological systems, indicating a broader variety of drivers and venues of innovation policy and practice. Nevertheless, although expanded beyond its origins, the NSI concept remains rooted in the industrial societal context from which it was derived.

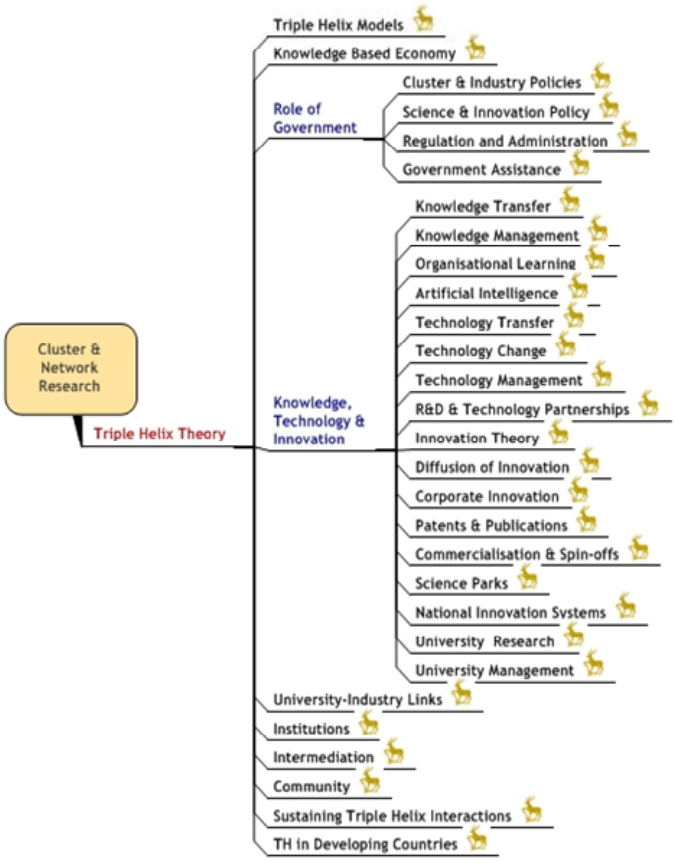
Triple Helix was extrapolated from an historical analysis of the emerging role of academic institutions in innovation. MIT's role in the transition of the Boston region from an industrial to a knowledge base, from the early twentieth century, gained force and direction during the Great Depression through collaboration with governmental and business actors. An analysis of regional strengths and weaknesses by a proto triple helix regional organization sponsored by the six New England States resulted in the invention of the venture capital firm in the early post war to fill a seed-capital and mentoring gap in the innovation ecosystem of

this region. The MIT case provided an exemplar (Etzkowitz, 1993, 2002) that was then theorised as a general innovation paradigm (Etzkowitz and Leydesdorff, 1995, 2000).

Mapping the Triple Helix

From the very beginning the TH community embraced both theory and practice - to grapple with the most complex representations of the so called A-B-G interactions, or the bi-lateral and multi-lateral engagement of Academia, Business and Government. An early reflection on the Triple Helix theory depicted a number of scientific and applied fields (Fig 1) and initial bibliographies were assembled. The Cluster Reading Databank is among the first bibliographic resources that dedicate space to mapping the Triple Helix scientific field.

Fig 1 Bibliographic Representation of Triple Helix Theory



Source: www.surrey.ac.uk/sbs/sar/centres/bcned/databank/index.htm (Todeva, 2011)

Triple Helix Theory comprises an eclectic body of scientific fields, analyzing complex socio-economic challenges in the search for Triple Helix solutions. Although the fundamental basis of the model is embedded in political economy, a variety of studies have brought forth a pleiad of multidisciplinary approaches to theorising about technological and institutional change, as well as government leadership and response to globalisation challenges, or building R&D capabilities within the public and the private sector.

Traditionally Triple Helix models have emphasised that the helices are complex spheres and trajectories of socio-economic activities undertaken in the so called *knowledge-based economies*. This label of the economy, however, is misleading as every economy is knowledge-based - even when this is a traditional knowledge passed verbally from one generation to another. It is when the traditional knowledge gets acceleration and momentum through scientific and educational establishments, that it creates a sphere of its own to drive further circulation and dissemination of knowledge. *University research, university management, innovation theory,* and the design and implementation of *national innovation systems,* are all focused on the development of the 'knowledge sector' and the deployment of *innovation capabilities* in the economy. In addition to these fields of enquiry, Triple Helix scholars have pursued topics such as k*nowledge management* and *organisational learning* to reflect on micro-scale innovation and creativity practices in the public and the private sector. Both public and private sector research is acknowledged to be at the forefront of economic development and the balance and complementarity between the two is seen as the critical component for robust innovation systems. The US is acknowledged as the leading technology engine in the world, and more recently it has revealed a more critical picture that behind its success in addition to the market forces stands a steady flow of capital from Federal institutions for R&D in the Universities and in the defence industry and the health sector.

Further spin of the Helices is induced with theorising on *private sector R&D*, or *corporate innovation*, *patent protection, technology management, technology transfer, technology partnerships, and collaborations*. Inevitably the public and the private sector R&D interact through employment of research staff, through *publications,* and through *co-evolving scientific fields*, or through co-location in *science parks*, *commercialisation, and spin-offs from University labs*. *University-Industry links* are acknowledged as *emergent entrepreneurial practices and strategies* on both sides.

Ultimately these interactions are led by *government science and innovation policies, cluster and industry policies, or general regulation, administration and financial assistance* of the university and the business sector. *The role of government* is also acknowledged as closely related with institutional and community development, aiming at producing sustainable trajectories of development, particularly for less-developed countries.

At its heart, Triple Helix theorising has engaged a number of diverse theoretical domains, such as innovation and knowledge management theories, alliance and networks theories, or cluster development and public policy theories. The iterations between the helices represent a powerful metaphor for dynamic changes, framing and engagement across multiple actors and domains.

Triple Helix XI

The Triple Helix theory has also sparkled its critiques, or those authors that call for revisions of the model, in order to accommodate the notions of society, the consumer, and the public. Surely, engagement between Industry, University, and Government, cannot ignore the very essence of its purpose. These complex interactions are in the name of the society and the

economic development of nations. The social dimension and the consumer are entangled right inside the Triple Helix, where they belong. This is exhibited well in Fig 2, where inside the triangle is the Triple Helix conference itself, the organisers, the delegates, the sponsors, and all speakers that contributed to this intellectual enterprise with their papers, presentations, and ideas, or resources, labour, reputation and expectations.

Although the voice of Triple Helix critiques can be heard now at any conference and international forum, the magic balance of the triangle stands strong. The latest Triple Helix conference in London (2013) exhibited the multiplication of the triangle. We were informed that we can re-invent the future only through *the knowledge triangle, spinning Research, Education and Innovation* (European Commission, and the European Society for Engineering Education, 2013).

The critical efforts to bring in more dimensions to the Triple Helix have found a comfortable home in *Stakeholder Mapping* and reporting *stakeholder engagement practices* across different sectors of the economy and different countries - from health care, to energy and sustainability. Among the *enablers* of Triple Helix interactions, researchers focused on *Institutions and Governance mechanisms*, on *Connectivity* and *Coordination*, *on Stakeholder engagement* and *Co-alignment of interests* between actors from different helices.

The surprise in tone of the conference in London was the stronger emphasis on the business sphere, and in particular, the impact of globalisation of markets and internationalisation of operations of firms and Universities. Many sessions were dedicated to the development of *business models at industry level* affecting restructuring of global industries and digital markets, or the design and implementation of *sustainable ecosystems* that are conducive to *open innovation*. Although there seems to be a consensus that the restructuring of business models at industry level requires Triple Helix intervention, there is no consistent view on *whether the business sphere can lead in a Triple Helix platform*. On the contrary, statements were made by multinational corporations that their leadership in product and technology innovation requires up-front robust government policy platforms and instruments, passing the leadership back to the Government.

The opening of the conference in London addressed the Triple Crisis of *globalisation*, i.e. the financial crisis, the failure to protect the environment, and the widening gap of poverty around the world. This set up a critical tone for the discussions, and particularly presentations that reported on *Triple Helix Solutions* to these global challenges. The need for concerted efforts on a global scale suggests that it is time to look at the Triple Helix model as a ***Meta-Helix model of multi-lateral government intervention, supported by multi-disciplinary knowledge, and collaborative business participation around the world***.

Finally, the unspoken dimension in papers was identified as *the role of the market* and the impact of global competitive market forces on businesses, industries, the university sector, or the comparative advantage of nations. Although the dominant paradigm remains that the Triple Helix is led by Government policies even for large multinational firms such as GSK and EDF, the notion of the *market-driven Triple Helix* has emerged, and in particular through economic models of global industries, digital technologies application, or internet security.

It was acknowledged also that the *revenue from commercialisation of innovation outputs* remains strictly within the industry, and firms are unwilling to share this value added from co-creation of ideas with the universities, or even with their consumers. The classical paradox *of protecting intellectual property vs open source and open innovation* was reiterated, highlighting that the universities do not receive a fair share of their value added in *the knowledge co-creation process*.

Fresh ideas about the *drivers, enablers, processes, and outcomes* from the *implementation of Triple Helix solutions* were shared, and the audience was reminded of the notion *of public good* as a major outcome of public funding. The tension and entanglement between the '*creative commons*' in open-source innovation and the constraints on residual claims to *intellectual property* are still waiting to be addressed by a new framework on *value co-creation*.

Many of the plenary sessions and interactive workshops drew attention to *the role of not-for-profit (NFP)* organisations, such as The Work Foundation, The Big Innovation Centre, The Innovation Hub - London TechCity, or The Triple Helix Association itself, along with its conferences and events. It became clear that these NFP organisations are effectively and efficiently *driving Triple Helix interactions*, *being in charge of self-financed massive know-how exchanges* and *value co-creation* of ideas through *organising, coordinating and facilitating* (Fig 2). This often is referred in the policy domain as enhancing the role of the Third Sector in driving economic growth, or employing NGOs *for transfer of knowledge and know-how to developing countries and regions*.

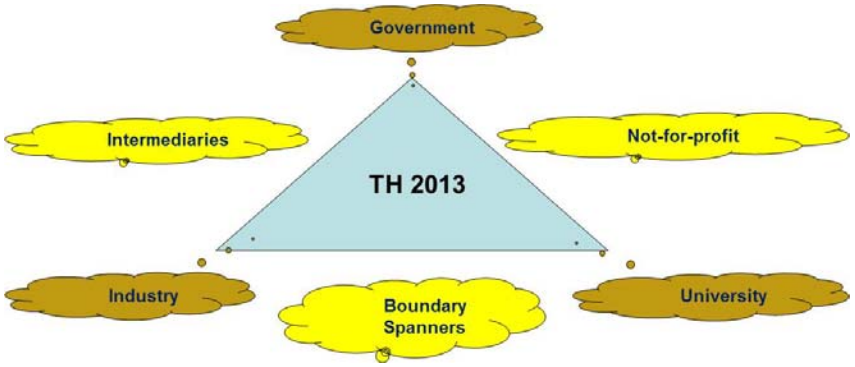


Fig 2 The Engagement of Powerful Actors to drive Triple Helix Interactions

Another surprise at the conference was the large number of delegates that sit on two or three Helices - the so called *Boundary Spanners*, translating ideas from one helix to another and participating in decision making, design, and implementation of *Triple Helix policies*. Such presentations revealed how insightful experiences across the helices could be, but also the need for further research into critical evaluation of current *Triple Helix practices* and documentation of best examples.

Ultimately, *the role of intermediaries driving Triple Helix interactions* was iterated strongly with presentations on the need for venture capital injections into Triple Helix frameworks (*financial intermediaries*), or other *institutional* formations in particularly associated with the 'Smart Regions' EU programme that offer umbrella protection for Triple Helix interactions at micro, mezzo, and macro levels. The potential conflict of interests for boundary spanning roles outlines a basic need for future research on *intermediation, representation, and leadership of Triple Helix scenarios*. It is clear that no social science can afford ignorance of the *ethical dimensions for intervention and resource allocation.*

Delegates attempted to focus on the provocative statement of 'mutating and unravelling Triple Helix transformations' and pointed at the need to maintain *conceptual clarity*, as well as to look below the surface of policy statements by looking at *the physical allocation of resources* for innovation and studying *the impact of such resource allocation on inequality and development.* Plenaries, workshops, and paper sessions all confronted the fact that *Triple Helix solutions* are sought by *global industries*, as well as in *international comparative cases*, where knowledge of the best-practice of Triple Helix Programs is contested in different country settings and *national innovation systems are compared and contrasted internationally*.

The audience at the London event embraced the challenges of *seeking Triple Helix Solutions for the Global Triple Crisis* (Finance, Development, Environment), and for *evaluating emerging and established Triple Helix Practices*. The Triple Helix community finally set a direction for the next annual conference of the Association in September, 2014 in Tomsk, Russia: **The Triple Helix as a Nucleus of Innovation and Economic Growth: New Frontiers, Solutions and Challenges.**

References

Andersen, B and Hutton, W. (2013) Raising the potential of the Triple Helix: co-innovation to drive the world forward. www.biginnovationcentre.com/Publications/39/Raising-the-potential-of-the-Triple-Helix.

Etzkowitz, H. (1993) The Triple Helix: A North American Innovation Environment http://taisurpjoe.tripod.com/NIS-PDF/America3.html

Etzkowitz, H. (2002) *MIT and the Rise of Entrepreneurial Science*. London: Routledge

Etzkowitz, H and Leydesdorff, L. (1995) The Triple Helix: University-Industry-Government Relations. A Laboratory for Knowledge Based Economic Development *EASST Review* 14 (1).

Etzkowitz, H and Leydesdorff, L. (2000) The dynamics of innovation: from National Systems and 'Mode 2' to a Triple Helix of university-industry-government relations (with Leydesdorff) *Research Policy*, 29 (2): 109-123.

Freeman, C. (1988) "Japan: A New National System of Innovation" in *Technical Change and Economic Theory*, G. Dosi et al (eds), Pinter, London, 330-348.

Mazzucato, M. (2013) The Entrepreneurial State: Debunking Public vs. Private Sector Myths. London: Anthem Press.

Vanderslott, S. (2013) Open Innovation and the Triple Helix: The Case of Neglected Tropical Diseases. Theme 1. Building innovative markets, places and networks, Triple Helix Conference XI, London.

Todeva, E. (2011) Cluster Reading Databank, University of Surrey, www.surrey.ac.uk/sbs/sar/centres/bcned/databank/index.htm.

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TRIPLE HELIX SCIENTIFIC NEWS

A SLEEPING GIANT: THE TRIPLE HELIX APPROACH FOR EFFECTIVE INTERNATIONAL COOPERATION FOR DEVELOPMENT

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ABSTRACT

In the present knowledge society, we are experiencing a convergence and crossing-over of three worlds which were previously separated: public research, business and governments; this convergence is represented by the Triple Helix model. It refers to a spiral model of innovation that captures multiple reciprocal relationships among institutional settings (public, private and academic) at different stages in the capitalization of knowledge. The Triple Helix model could be a new paradigm of development that, when applied along with a good Information and Communication Technology (ICT) infrastructure and mindset, could help achieve a more fair distribution of digital dividends to developing countries, reducing the digital divide and attaining the Millennium Development Goals (MDGs).

This paper presents the best practice of "The International Council for Caring Communities" (ICCC) that, in our opinion, represent a Triple Helix approach in action. ICCC in fact, since 1995, has been addressing social and economic issues with a method based on the cooperation efforts of non-traditional groups of decision makers and experts from government, international organizations, local authorities, the private sector, academia, health organizations, and related industries. This format can give interesting insights on how a Triple Helix approach can be successfully applied in international cooperation for development projects.

By looking at some of the initiatives implemented by ICCC in the past years through the lens of the Triple Helix method, the paper will present the Triple Helix approach as a base to go from the conceptualization to the implementation of effective international cooperation for development.

The first section of the paper highlights how the effective deployment of ICT can create or expand economic and social opportunities for a growing share of the population, and it analyzes the challenges faced by lower-income populations in their efforts to participate in and benefit from the growth of the knowledge economy. It discusses the "digital divide", and shows how a Triple Helix approach can help foster social and economic inclusion through the active participation of the public, private, and civil society sectors, under integrated efforts towards the development of an inclusive knowledge society.

The second section presents some of the ICCC's best practices, starting from the international Student Design Competitions, United Nations High-Level Working Session, and Windsor Castle Consultations (UK). These unique events have moved forward the concept of the importance of collaboration, highlighted local and cultural successful endeavours, and stimulated discussion as to the needs of 21st century issues that can enhance the quality of life for all generations. All of these endeavours have stimulated new avenues for discussion/dialogue and policy development that bring to the fore the role that innovation can play in the economic growth and well-being in developing countries.

Finally, the third section presents the ICCC's initiative "Music as a Global Resource: Solutions for Social and Economic Issues", that represents an example of the ICCC's Triple Helix in action approach. The uniqueness of this initiative is the use of ICT as a tool to foster easy communication between those with knowledge and those with challenges. It illustrates a broad scope of cutting edge possibilities, scientific research, and community projects featuring music, its cost-effective use, and adaptation to cultural norms including integration of multi-media centers, e-technology, and use of both East and West music.

It represents a concrete example of how ICT can play a major role within the Triple Helix method for the attainment of the MDGs.

I. Information and Communication Technology (ICT) and Development

The rapid advances and pervasive diffusion of ICT, combined with the growth of the Internet and other global networks have led to deep transformations in economic, social and institutional structures. ICT applications affect the performance of businesses and the efficiency of markets, foster the empowerment of citizens and communities as well as their access to knowledge, and contribute to strengthening and redefining governance processes at all institutional levels. Indeed, ICT is changing the way people live and do business globally, and is creating new social and economic development opportunities especially for lower-income populations, by enlarging markets and facilitating greater access to information, public services, and economic activity.

Numerous studies have focused on the direct contribution of ICT to socioeconomic development and, while their findings and conclusions vary according to the context and application, there is an overall agreement that access to information and its transformation into knowledge can augment production processes, increase income potential, and improve the living conditions of the poor. ICT is an effective tool that, when supplemented by investments in connectivity and other factors such as innovation, education, health and infrastructure, increases competitiveness and contributes to economic growth, social development and poverty reduction.

ICT solutions can facilitate the participation of lower income populations in the development process by directly tackling relevant aspects, which precisely hinder their integration into social and economic development. In particular: (a) limited knowledge and literacy which impairs access to skills and jobs (education); (b) poor health and sanitary conditions limiting employability and risk-taking attitudes (health); (c) active involvement in civic life and strengthening of democratic process; and (d) economic opportunities.

In this respect, the evolution of modern ICT brings about concrete opportunities for enhanced provision of social services and poverty reduction through, among others, distance education and telemedicine solutions, connectivity, and strengthened and more transparent government operations (i.e. e-government). It also provides for the modernization and expansion of the micro-finance sector to effectively reach marginalized and less favored populations through effective technology-based solutions and innovative financial services and, thereby, creating economic opportunities at the local level.

Inequalities in access to education - especially high-quality education that prepares young people for employment opportunities in an inclusive information society, and to become active citizens in complex, market-driven, democratic societies - are a critical barrier to reducing poverty and increasing economic growth. Near-universal access to the Internet via low-cost networks enables teacher training, enhances student access to traditional teaching materials via Internet distribution, and allows the introduction and use of new and advanced multi-media resources and learning tools. The young generation takes readily to computers and such resources, and there is evidence that classroom access to ICT tools can improve learning and help motivate students to stay in school. At the same time, there is evidence that informal learning outside the classroom is strongly enhanced by affordable access to the Internet. This informal learning is driven, in part, by the growing availability of information on the Internet and the increasing organization of such information by search engines, but also by the growing use of interactive systems - from "chat" systems to e-mail and text-messaging to web logs and other interactive web-based systems.

The improvement in the delivery of health care services in geographically remote and rural areas is one of the most promising and clearly demonstrated applications of ICT in social development. In particular, ICT is being used in many developing countries and communities to facilitate: (a) remote consultation, diagnosis and treatment through the use of digital cameras to download images onto a computer and transfer them to doctors in nearby towns; (b) collaboration and information exchange among physicians; (c) ICT-based medical research through the use a network of satellites and ground stations to submit data for clinical trials; (d) medical training through ICT-enabled delivery mechanisms; and (e) access to centralized data repositories connected to ICT networks that enable remote healthcare professionals to keep abreast of medical knowledge. Moreover, the Internet is an effective means to disseminate public health messages and disease prevention techniques in developing countries. It enables better monitoring and response mechanisms. Also, ICT is helping improve the efficiency of public health systems and medical facilities by, for example, streamlining medical procurement or creating and managing patient records.

ICT tools can drive down transaction costs for financial services such as microfinance and a widening range of banking, insurance, and other services for low-income groups, particularly as their delivery expands beyond nonprofit groups and becomes more widespread. For example, the expanded use of ICT and the Internet can reduce the transaction costs of remittances in a way that brings higher social benefits for all parties involved in these transactions. Moreover, ICT technology offers several approaches to expanding access to electronic transactions and banking services via remote transaction devices for microfinance that work over mobile phone networks; smart cards that can store account balances, transaction histories, and positive ID such as a fingerprints. The next generation of mobile phones may be capable of conducting transactions automatically via very short-range radio, potentially turning phones into electronic wallets.

Largely for reasons of cost, most rural communities and many low-income urban communities lack effective and affordable local phone systems, whereas a low-cost local phone system can make universal access a reality in many communities. The technological potential to solve the problem has now emerged via local Wireless Fidelity Networks (WiFi) and Voice-Over-Internet (VOIP) telephony using peer-to-peer systems that enable access to a great variety of Internet services and information via a computer or other converged device. Voice-driven or voice-accessible services - especially if made available in indigenous languages - can help overcoming literacy and computer skill barriers. Other benefits include ending rural isolation, enhanced family solidarity, increased access to information and services, improved ability to find enhanced family solidarity, increased access to information and

services, improved ability to find employment and, at a community level, higher economic capacity and productivity and wider citizen participation in democratic processes.

A recent study by the London Business School found that, in a typical developing country, an increase of ten mobile phones per hundred people boosts GDP growth by 0.6 percentage points. The study concludes that wireless solutions are concrete examples of "technologies that help people help themselves."

It becomes clear that the poor can benefit from the effective deployment of ICT and the development of the knowledge economy when such interventions match the local conditions and meet the following four requirements. First, promote a multi-stakeholder partnership framework delineating the effective participation of the public sector and civil society, while creating the incentives for socially responsible private investment. Second, strengthen the provision of ICT-based public social services and promote social inclusion, while maintaining the role of the private sector as the main source of innovation. Third, stimulate macroeconomic growth by facilitating access to knowledge and information through increased connectivity and appropriate ICT solutions for marginalized and lower-income populations, thereby tapping a strong market potential. And fourth, design and adopt long-term ICT investment frameworks in human development (i.e. education, health and environment), along with the design and implementation of cost-effective technologies aimed at increasing the market access, efficiency and competitiveness of the poor (connectivity, knowledge centers, etc).

As with all major and wide-ranging technological advances, the ICT revolution is at the same time creating enormous opportunities and posing daunting challenges. On one hand, it has the potential to increase productivity and wealth, generate new activities, products and services, and improve the well being of the population, notably in regard to education, government and health levels. On the other hand, the uneven distribution of such opportunities can lead to further alienation of marginalized communities and an exacerbation of existing socioeconomic inequalities. Thereby, a balanced access and effective use of ICT tools and networks in the new global knowledge economy, along with an integrated process of technological innovation are critical for reducing poverty, increasing social inclusion and improving living conditions for all.

The "digital divide" (a phrase coined in the 1990s) described the perceived growing gap between those who have access to and the skills to use information and communication technologies and those who, for socioeconomic and/or geographical reasons, have limited or no access. In particular, it is used to raise the concern that the emergence of ICT could exacerbate existing inequalities in the access to information and that, thereby, certain groups could face additional disadvantages because of their geographic location, age, gender, culture, and social and economic status, among others. Moreover, the phrase reflects the prevalence of socioeconomic and structural inequalities at the regional, national, and local levels, which are characterized by insufficient infrastructure, relatively high access costs, inappropriate or weak policy regimes, inefficiencies in the provision of telecommunication networks and services, lack of local content, and uneven ability to derive economic and social benefits from information-intensive activities.

The United Nations Millennium Declaration notes that efforts to make access available to all and harness the power of ICT can contribute toward the achievement of the Millennium Development Goals (MDGs) by 2020, thereby creating "digital opportunities" in development: directly, by expanding the reach, scope and impact of social development programs, health services, and education and training programs, and providing opportunities for improving gender equality and citizen participation; indirectly, by creating new economic opportunities and/or extending them to lift individuals, communities, and nations, out of poverty.

Yet, these opportunities cannot be effectively and fully realized if left to market forces alone, and require the active participation of the public, private, and civil society sectors under integrated efforts towards the development of an inclusive knowledge society. This is where a Triple Helix approach can be more beneficial; in fact, the present knowledge society, is the result of a convergence and crossing-over of three worlds which were previously separated: public research, business, and governments; this convergence also represents the Triple Helix model. This refers to a spiral model of innovation that captures multiple reciprocal relationships among institutional settings (public, private, and academic) at different stages in the capitalization of knowledge. The Triple Helix model could be a new paradigm of development and inclusion that, along with a good ICT infrastructure and mindset, could help achieve a more fair distribution of digital dividends to developing countries, reducing the digital divide and helping attaining the Millennium Development Goals (MDGs).

II. The Windsor Format Gathering: A Triple Helix Approach in Action

The International Council for Caring Communities (ICCC) is a not-for-profit organization that has Special Consultative Status with the Economic and Social Council of the United Nations. It was founded in 1994 to stimulate and showcase innovative concepts that deal creatively with the challenges of global longevity. ICCC acts as a bridge linking government, civil society organizations, the private sector, universities, and the United Nations, in their efforts at sparking new ways of viewing an integrated society for all ages.

In 2006, ICCC launched its "Windsor Format" that involved input from international decision-makers, world leaders and futurists, representing business, design, architecture, education, health, research and technology, along with local and central government and United Nations officials. The success of the "Windsor Format" is due to its non-traditional gathering of developing and developed country government officials, private sector decision-makers, and related experts focused on 21st Century issues of global impact. From this point of view the "Windsor Format" can be considered as an example of a Triple Helix approach in action.

The Windsor Consultations Series takes place at St George's House within Windsor Castle in Berkshire, UK itself, so chosen to build upon origins dating back to 1384 when it was established as a place where people of influence and responsibility could come together to explore and develop ideas, and possible solutions, to the problems of the day. The basic approach is to discuss, re-examine, rethink, redefine, and identify viable recommendations, up -scale successful projects and concrete plan of actions on existing

and future programs.

These cross-sectoral Consultations have included: Age of Connectivity: Citizenship and Care for Cities of the Future; Knowledge Management: Modern Innovations and Technology towards the Knowledge Society; Government Training Revisited, and a three part series: Confronting the Diseases of Poverty; Technology and Innovation for Equity; Digital Health in the Age of AIDS; Climate Change, Health Systems and The Digital Revolution; Digital Health and The Orphans of Global Health: Child Mortality and Maternal Health, and Chronic Non-Communicable Disease and Neglected Tropical Disease.

The ICCC's Triple Helix approach in action of the Windsor Consultations Series can be best appreciated by considering some particularly successful initiatives, namely: the "Citizenship and Care for Cities of the Future" Consultation, the "Knowledge Management: Modern Innovations and Technology towards the Knowledge Society; Government Training Revisited" Consultation and the "Age of Connectivity: Cities of Hope" initiative.

ICCC realized that "a sleeping giant" is awakening, "the agequake", as every month around the world over one million people turn sixty years old, with the fastest growth in developing countries. To address this challenging topic not yet on the "radar" of most governments, the first Windsor Consultation "Citizenship and Care for Cities of the Future" was held in October 2007 to stimulate awareness and action. The session addressed current and future trends with special attention to demographic shifts, rapid urbanization, migration, the increasing burden of chronic disease, and changes in work and education. It explored new possibilities in information and communication technologies and the design of dwellings and cities, as well as, the increasing role of citizens providing the majority of care and support to family and friends who are ill, frail, or disabled. It also reviewed the potential impact of a number of worldwide trends on caring relationships and the provision of care present and future requirements.

The Consultation participants proposed launching an international initiative to support those involved in care as a contribution to the pursuit of the achievement of the Millennium Development Goals (MDGs), and the work of UN Habitat in cooperation with other related UN partners. Their recommendations focused on coordinating and leading public and private sector partners and contributors in activities that would:

- Demonstrate the possibilities open to policy makers and regulators in government, business and community and stimulate the design of products and services;
- Encourage and, in practical terms, release the potential of caregivers and strengthen their contribution and involvement in local economies and communities;
- Promote cross-disciplinary research and development programs by coordinating good practices and ideas from business, design, construction, employment, education, leisure, and the arts to design, and develop care-friendly living and working environments in developing and developed countries;
- Establish an international mentoring expert group and a virtual academy with global and local capacity to support urban and rural development initiatives that sustain caring relationships within and across ages and generations;
- Integrate the use of Mobile-health (M-health) and Mobile-learning (M-learning) technologies presently being used and developed for both developing (Africa) and developed countries;
- Encourage application of the Community Carte System (CCS), a Triple Helix approach, using a web-based system to collect, analyse, and disseminate, information on people's wellbeing, which can be easily incorporated in the websites of local authorities. People can use the web-based self-diagnostic tool to better understand their strength and vulnerabilities in the pursuit of wellbeing.

The Windsor Consultation's unique contribution to the "health and environment" dialogue drew on research experience in Europe and Africa, as well as the outstanding related work of UN Habitat and the newly launched WHO Age-Friendly Cities Project. It benefited from the insights and practical knowledge of experts[1] who reached the brief broadly stated conclusions and insights which included:

1. The economic and social contribution made by family and friend caregivers is highly significant and often equates or exceeds the contribution of services provided by government, non-governmental organizations, and the private sector. Caregivers underwrite state provision and are an important but often unrecognized feature of national life.
2. Increasing longevity, population ageing and the rapid growth of non-communicable diseases, means that increasing numbers of people worldwide will become caregivers and will juggle work, education, care, and other family responsibilities. People may become caregivers at any stage of life.
3. The provision of care and the ability to support a close relative or friend can add to and bring meaning to life. But, when the demands go beyond a certain level, caring can draw people out of work and community life altogether. The loss to individuals, local economies and communities is almost incalculable.
4. Worldwide trends such as urbanization and migration will exert an influence on patterns of care alongside increasing longevity

[1] This unique Consultation was organized by Dr Peter Mathias, Bridge Research and Development, Professor Dianne Davis, ICCC, in cooperation with the United Nations Programme for Human Settlements. Chaired by Baroness Jill Pitkeathley, President, Euro Carers, UK. Participants representing the Triple Helix model included: UN Habitat, Liaison Office to the EU and Belgium, Workforce Development, Skills for Care, Proud City Co-op, KLC School of Design, Gaur Associates (India Telemedicine), United Nations Office of Partnership, Kent County Council, Help the Aged, University of Kalmar/Careers, Sweden, Oxford Institute of Ageing, African Research on Ageing Net Network, Agrenska Foundation (Estonia), Robert Bosch (Germany), European Bank for Reconstruction and Development, Institute of the Built Environment, British University in Dubai, Microsoft, New Directions Consulting, Policy Research Institute on Ageing, University of Central Lancashire, City and Guilds of London Institute, ACE, Careers, UK, SOS-Malta (correspondent), University of Leeds, Lodge Heswall and Blackpool (Forensic Mental Health Care), Open City Portal, and Care Forum Wales was a group of international "non-traditional" leaders and futurists, representing business, design, architecture, education, health, research and technology. These participants took part in the Consultation alongside participants from international NGOs, local and central governments.

and changing patterns of health and illness. Rapid urbanization can disrupt caring relationships just as it can create poverty, damage health, and lead to economic and social hardship.

5. A focus on caring must be addressed and can offer a new dimension to urban planning. It offers the potential to contribute to the building of common agendas between different age groups and between the old and new communities who share urban space.
6. Over ten percent of the population is likely to be involved in caring at any one time. It makes social and economic sense to work with citizens to strengthen caring, make it more possible for caregivers to remain in employment, take part in education and participate in urban governance which is enabled with the use of ICT. Policymakers' indifference will squander a precious resource for cohesion, integration, and the improvement of lives in slums and throughout society generally.
7. For all these reasons, one of the key Windsor recommendations is that support for caregivers should be just as much a part of the everyday infrastructure of cities and settlements as roads, hospitals, and schools.

In the Windsor tradition the "Knowledge Management: Modern Innovations and Technology towards the Knowledge Society; Government Training Revisited" Consultation, that was held in 2007, broke new ground by gathering for the first time a "non-traditional" group of dignitaries, senior decision-makers, donors, and leading experts including government officials, from selected developing and developed countries directly involved in designing and implementing Knowledge Management programs.[2] This convergence and crossing-over of public research, business and governments which were previously separated represented a good example of the Triple Helix model in action.

The Consultation stimulated practical recommendations, reviewed up-scale successful projects and developed a concrete plan of actions related to how existing and future training packages under the United Nations Public Administration Network (UNPAN) platform can be managed and developed effectively in an effort to ensure that the basic objectives of government and civil society organizations are enhanced. It established the essential building blocks for productive sharing of experiences and future actions; recommendations evolved from a Triple Helix approach:

- Presentation of the UNPAN training program on areas of assistance and cooperation, namely, improving the content of the exiting modules, increasing accessibility to the UNPAN training modules for potential participants from the developing countries by providing an opportunity to free internet access, and translation of training modules;
- Presentation of the existing training programs in the area of e-governance and knowledge management;
- Presentation of developing country projects in the area of new technologies including mobile technology (M-Technologies) such as M-Education and M-Health;
- Exploring partnership opportunities and actions needed to support the UNPAN training program, as well training programs of the participating institutions through strengthening cooperation and collaboration among the participants of the Consultation.

Results encouraged "Partnership in Practice," another typical aspect of the Triple Helix approach, using ICT to spearhead rethinking of priority actions and strengthen the effectiveness of existing institutional frameworks and implementation mechanisms between developed and developing countries as well as between developing countries, using South-South cooperation as an effective modality for social and economic development, as well as, enhancing regional and interregional Knowledge Management (KM) cooperation and integration for accelerated socio-economic development in the globalized environment.

The ICCC initiative "Age of Connectivity: Cities of Hope", another example of a Triple Helix in action approach, seeks to create an open network, which leads to international planning and advisory groups seeking to involve public and private sector organizations in a range of activities supporting the overall goals.

In its first stages the initiative will bring the proceedings of Windsor and New York and later developments to a worldwide audience as the first step in the formation of an international mentoring group and academy, and seek partnerships, alliances, regional hubs, and interest groups, to create and disseminate ideas and bring the products to local and national attention by taking the following steps:

- draw up a business plan
- set targets
- secure the agreements necessary to acquire the resources
- build an organization capable of contributing to the achievement of the Millennium Development Goals in the period to 2015.

This proposal is based on the recommendations of the Windsor Consultation 'Citizenship and Care in Cities and Settlements of the Future' and formulated by Consultation members following a High Level Working Session held at UN Headquarters in New York on February 8, 2008.

III "Music as a Global Resource" Initiative: A Triple Helix approach for a new ICT based Development Paradigm

Every culture has its own music, a unique "natural resource" as diverse as the planet itself; however, unlike fresh water, coal, oil, and other natural resources, music is one that remains largely

[2] The forty participants included: Latin American Center of Development Administration (CLAD), Regional Cooperation Office for City Informatization (RCOCI), MBI International Foundation, Gyumri State Economic University (Armenia), Accessibility Business Unit, Microsoft, CISCO, United Nations Dominican Republic Ambassador, MBI Jaber Foundation, United Nations Office of Partnerships, Digital Links International. European Bank for Reconstruction and Development, Sustainable City Development Specialist, Bridge Research and Development, UK, Basque Industrial Development Agency, International Observatory for Strategic Innovation (NABE), the Arab Administrative Development Organization (ARADO), Dundalk Institute of Technology, City and Guilds Institute and cooperative education experts.

untapped. The ICCC's "Music as a Global Resource Initiative" is using the universal language of music to serve as a tool to promote community development and peace building, and better living conditions, including the improvement of social indicators, such as health and education. The initiative's unique combination of using music and ICT towards sustainable human development enables countries with similar challenges to replicate demonstrated solutions that contribute to an increased social wellbeing on a global scale.

How can music make a difference and be recognized for other than enjoyable entertainment, or a means through concerts to raise funds for special causes? How can the naturally occurring use of music, as found in various cultures, be highlighted and redirected as a practical tool for consideration and adaptation to provide solutions to present social and economic issues? With this in mind, the ICCC thought it an important subject to be explored and brought to the attention of government officials and decision makers, when Heads of State agreed at the Millennium Summit in 2000 to the eight MDGs.

The challenge was how to incorporate the powerful use of music as a means of addressing the MDGs. An "out of the box" approach therefore began in 2001. Thus, ICCC launched the "*Music, Culture, Technology and Healthcare*" Dialogue as part of the United Nations' International Year on Dialogue Among Civilizations, focused on enabling the full utilization of music's benefits as a tool for dialogue among civilizations, launching a series of conferences featuring projects that provide new understanding and awareness that music can offer solutions for social and economic issues. The event highlighted the integration of ICT as a means of disseminating the knowledge directly from projects in the field, thus, stimulating the development of a series related Conferences and High-Level Working Sessions.

In 2005, "Promoting an Enabling Environment: Integrating Music, Technology, Culture, and Healthcare" Conference featured successful local and cultural endeavours and stimulated *new* mindsets as to the needs of 21st century issues.

In 2008 and 2009, within the framework of UN Habitat and with other UN partners, two High-Level Working Sessions gathered a non-traditional group of decision makers and experts from government, international organizations, local authorities, the private sector, academia, health organizations and the music industry to explore the use of music to enhance community, health, well-being, learning, peace building, and the quality of life for all generations. Realizing a global knowledge gap existed, and inspired to apply the power of ICT, the "Music as a Natural Resource" initiative was established to "cross-pollinate" successful projects between the developed and developing world, to build upon lessons learned and to foster opportunities and application of new services. These sessions addressed the information "gap" and need to identify successful projects from all corners of the world.

In response, the "Music as a Global Resource: Solutions for Social and Economic Issues" 2009 Compendium was launched. The Compendium was a successful Triple Helix model, which enhanced and highlighted not only solutions, but fostered easy communication between those with knowledge and those with challenges by encouraging the use of ICT, thus promoting the maximum use of limited funds and preventing "reinventing the wheel."

The "*Music as a Global Resource: Solutions for Social and Economic Issues*" 2011 Compendium, identified over 100 successful projects from fifty countries representing all corners of the world. It illustrated a broad scope of cutting edge possibilities, scientific research, and community projects adapted to cultural norms, including integration of multi-media centers, e-technology and the use of both East and West music.

The major objectives of the Music Initiative included innovative strategies for assisting developing countries with solutions for their social and economic issues and fostering "cross-sectoral" dialogues within the format of the Windsor gathering to support the implementation of the MDGs, representing a new development paradigm, moulded on the Triple Helix approach.

A High-Level Working Session on the integration of ICT, Music, and Urban Futures, held June 23 2011 at United Nations Headquarters, is another example of the Triple Helix in action: the cross-section of participants and presenters with extensive experience in public policy, ICT, business, and music to explore, review and blend traditional and cutting edge tools to stimulate strategies that can be up-scaled and adapted to local cultures. The Session was organized by ICCC in cooperation with UN Habitat and other partners in support of the Habitat Agenda, the Millennium Development Goals (MDGs), and the priorities of the UN World Urban Forum 6 "Urban Futures." It addressed opportunities and challenges facing a rapidly urbanizing world with a Clarion Call for Action.[3]

The 2011 Compendium is recognized as a major contribution to the Millennium Development Goals (MDGs), and has been posted on the United Nations Public Administration (UNPAN) website: www.unpan.org/Regions/Global/Directories/Resources/tabid/456/ItemID/1836/language/en-US/Default.aspx. UNPAN is an important communication vehicle for both governments and civil society with over 80,000 hits a month. It enables the United Nations countries in economic transition, to maintain an Internet-based network that links global, regional, and national institutions devoted to public administration. Eventually, it seeks to build the capacity of regional and national institutions, enabling them access, processing and disseminating relevant information through up-to-date ICT for the promotion of better public administration and better service delivery.

The Music Compendium has multiple projects that are examples of the Triple Helix approach. A sustainable community development project "Quintessenso Cultural Work" founded in 2007 in Inner Mongolia is featured for it believes that it is essential to preserve the history and the cultural heritage of the Chinese ethnic minorities living in the grasslands, forests, and highlands of the Inner Mongolia Autonomous Region, Peoples Republic of China. This choir is composed of thirty-seven children, ages 5-12. They come from the far end of Northeast China in the area of the world -renowned Hulun Buir Grassland, where children draw musical inspiration from the mystic forest, rivers, and lakes, and inherit their cultural heritage from the same Mongolian spring that

brought up Genghis Khan. This is China's first ethnic minority children's choir. Wucai Children's Foundation was established for the purpose of supporting the culture and education work of the children from the ethnic minorities living in China.

Many of the graduates of the Choir, given the program opportunity, have now gone on to higher education and professional performance. This is made possible by the support from Huashan Scenic Area Management Committee, Shanxi Province, China, Lao Miao Jewelry Co, Limited, Shanghai, Catic Information Technology Industry Co. Limited, Shenzhen, together with the Inner Mongolia Autonomous Region government, who sponsored the Expo show and tour in Hohhot. Credit Suisse sponsored concerts with the China Philharmonic Orchestra during the Beijing International Music Festival, the New York Philharmonic Orchestra for a special Chinese New Year concert January 24, 2012 at the Lincoln Center, and on January 25 at the United Nations. This was the ensemble's first New York trip. Funds raised by these performances are returned to the families and villages, thus, creating a sustainable community.

ICCC continues to expand its Triple Helix approach as it fosters new mindsets for community-based rehabilitation and ageing in developing countries in response to the growing challenges and opportunities presented by the "Agequake."

CONCLUSIONS

ICT is changing the way people live and do business globally, and is creating new social and economic development opportunities especially for lower-income populations, by enlarging markets and facilitating greater access to information, public services and economic activity. The effective deployment of ICT can create or expand economic and social opportunities for a growing share of the population in the developing countries, and bring unprecedented opportunities to tackle the challenges faced by lower-income populations in their efforts to participate in and benefit from the growth of the knowledge economy. Yet, for these opportunities to be effectively and fully realized it requires the active participation of the public, private, and civil society sectors under integrated efforts towards the development of an inclusive knowledge society. This makes the Triple Helix model an interesting new paradigm of development and inclusion that, when applied along with a good ICT infrastructure and mindset, could help achieving a more fairer distribution of digital dividends to developing countries, reducing the digital divide and helping attaining the Millennium Development Goals (MDGs).

In this paper we described some of the International Council for Caring Communities' best "Triple Helix approach" practices that have stimulated new avenues for discussion/dialogue, and policy development that brings to the fore the role that innovation can play in the economic growth and well-being in developing countries. ICCC acts as a bridge linking government, civil society organizations, the private sector, universities, and the United Nations in their efforts to devise new ways of building an integrated society. From this point of view, the ICCC's approach can be considered as a "Triple Helix in action" approach.

The ICCC gatherings composed of a non-traditional group of decision makers and experts from government, international organizations, local authorities, the private sector, academia, health organizations and related industries, have been ICCC's centerpiece for addressing social and economic issues. This format, in our opinion, represents a good model for tackling development and deploying new development strategies. Altogether, the ICCC model, considered as a "Triple Helix in action" approach, represents the "breaking" of the old approach to international development, and the onset of a new effective one.

The results of the gatherings, in fact, have been a series of practical recommendations, and promotion of the "Call for Action!" agenda. The method stimulated "fast-track" awareness of information "gaps", directly and indirectly promoted collaboration, and enhanced cost-effective use of limited funds to be used for international development. It added an important element that focused and fostered the "connecting the dots" mindset to enhance community, health, wellbeing, and the quality of life that supported the attainment of the MDGs and the post-2015 sustainable development agenda.

REFERENCES

Assolombarda, *Ricerca ed innovazione tecnologica: analisi del fabbisogno delle aziende*, Milano, 1994.

Bellavista, J. (1997) The Barcelona Science Park: a Triple Helix

[3] The Session was Chaired by Ms Cecilia Martinez, Director, United Nations Human Settlements Programme (UN HABITAT), New York Office, followed by two Interaction Sessions:

1-Success Stories that address Social and Economic Issues: moderated by Dr Denis Gilhooly, Executive Director, Digital He@lth Initiative, Co-Secretary, Broadband Commission for Digital Development; Topics addressed: Community Radio Asia Region: by Mr John Kent, Founder, Community Development Through Investment; Innovation using ICT: 10,000 Architects, Youth Program by Professor Jan Wampler, Department of Architecture and Urban Design, Massachusetts Institute of Technology MIT.

2 - Imagining the Possible: Music and ICT as MDG solutions, moderated by Compendium Co-Editors: Professor Barbara Hesser, Music Therapy Department, New York University, and Dr Harry Heinemann, Special Projects Coordinator, International Council for Caring Communities. Project presentations illustrated the scope of the "Music as a Global Resource: Solutions for Social and Economic Issues"

Using Music to Connect Communities, Bridge Divides and Heal the Wounds of War by Ms Laura Hassler, Director, Musicians Without Borders; **Music for Social Change: An OAS Program in Haiti, St. Lucia and Jamaica by** Mr Mariano Vales, Music Program Coordinator, Organization of American States; **Field Band Foundation: Developing Life Skills in Youth Through Music for Eradicating Poverty and Promoting Development. South Africa:** Dr Cathy Benedict, Assistant Professor of Music Education, Florida International University and Dr Patrick Schmidt, Associate Professor of Music Education at the Westminster Choir College of Rider University; **Baltic Street Band, Community Music with Mentally Ill Musicians:** Dr Peter Jampel, New York University.

Session concluded with a **Leapfrog Technology Surprise:** a presentation of **"**Center of Excellence in Technology and Innovation for the Social Inclusion of People with Disabilities" (CETID), by Dr D Piaggesi, Managing Director of the Fondazione Rosselli Americas (FRA) and recommendations for the Sixth United Nations World Urban Forum (WUF6) to be held September 1-7 in Naples, Italy.

model in the Catalan and Spanish Research System", in Leydesdorff, L and Etzkowitz H (eds), *A Triple Helix of University-Industry-Government relations*. The future location of Research.

Belsey, A M. (2005) *AIDS and the Family: Policy Options for a Crisis in Family Capital,* UN Department of Economic and Social Affairs.

Buckner, L and Yeandle, S. (2011) *Valuing Carers*, CarersUK.

Bush-Brown, A and Davis, D. (1992) *Hospitable Design for Healthcare and Senior Communities*, Van Nostrand Reinhold, NY.

Campodall'Orto, S and Ghiglione, B. (1997) *The Technology Transfer Process within the New Innovation Models, in Managing Technological Knowledge Transfer*, EC-Social Sciences COST A3, vol 4, EC Directorate General, Science, Research and Development, Bruxelles.

CESPRI. (1997) *Cambiamenti nella struttura industriale lombarda e politiche regionali per l'innovazione tecnologica*, Rapporto di ricerca, University Bocconi, Milan.

DOT-Force (2001) *Digital Opportunities for All*, Report of the G8 Digital Opportunities Task Force (DOT-Force).

Ericsson and Digital Health Initiative (2010), *Challenges and Opportunities in Scaling Up Digital Health* www.ericsson.com/res/thecompany/docs/corporate-responsibility/2010/DHI_delivered_FINAL.pdf

Etzkowitz, H. (1994) *Academic-Industry Relations: A Sociological Paradigm for Economic Development*, in Leydesdorff, L and Van den Besselaar, P (Eds), *Evolutionary Economics and Chaos Theory: New directions in technology studies*, Pinter, London.

Etzkowitz, H. (1997) *The Triple Helix: academy-industry-government relations and the growth of neo-corporatist industrial policy in the US*, in S Campodall'Orto (ed), *Managing Technological Knowledge Transfer*, EC Social Sciences COST A3, Vol 4, EC Directorate General, Science, Research and Development, Brussels.

Eurofound. (2006) *Employment in social care in Europe*, European Foundation for the Improvement of Living and Working Conditions.

Eurofound. (2004) *Health and care in an enlarged Europe,* European Foundation for the Improvement of Living and Working Conditions.

Fondazione Rosselli - CES&T. (1995) *Analysis of the regional science and technology policies in Europe*, (CE-DG XII, Grant Contract: PSS*0819), Fondazione Rosselli Scientific Report, 23.

Gebhardt, C and Etzkowitz, H. (1996) *Regional innovation organiser: a quasi-public role for transnational corporations and universities*, in Management and New Technology, COST A3, Madrid.

HM Government UK. (2004) Carers (Equal Opportunities) Act 2004. London: The Stationary Office.

ICCC. (2002) Ageing Dialogues 2020: the Future of Ageing, *Second World Assembly on Ageing*, Madrid, April 2002, 131-132

ICCC, *International Student Design Competitions Retrospective – 1994-2005*, www.unpan.org/Regions/Global/Directories/Resources/tabid/456/ItemID/1836/language/en-US/Default.aspx

ICCC, *Music as a Natural Resource: Solutions for Social and Economic Issues-Compendium*,www.unpan.org/Regions/Global/Directories/Resources/tabid/456/ItemID/1836/language/en-US/Default.aspx

International Longevity Center-USA and Schmieding Center for Senior Health and Education, *Caregiving in America*, International Longevity Center, USA, 2006.

ITU and UNESCO, *A 2010 Leadership Imperative: The future built on BROADBAND*, Report of the Broadband Commission, 2010.

Jones-Evans, D. (1997) *Entrepreneurial Universities - Cases of Good Practices from the Republic of Ireland, International Conference: Technology Policy and Less Developed Research and Development Systems in Europe*, UNU-INTECH, International Conference, Seville, 18-20 October 1997.

Kusakabe, M. (2012) *Measuring Wellbeing for the City of Liverpool*, Open City Foundation Wellbeing Survey Series.

Lane, D, Malerba, F, Maxfield, R and Orsenigo, L. (1991) *Choice and Action*, Journal of Evolutionary Economics.

Leydesdorff, L and Etzkowitz H (Eds) (1997) *A triple Helix of University-Industry-Government relations*. The future location of Research, Book of Abstracts, Science Policy Institute, State University of New York.

Leydesdorff, L and Etzkowitz, H. (1996) *Emergence of a Triple Helix of University-Industry-Government Relations*, Science and Public Policy.

Leydesdorff, L and Van den Besselaar, P. (Eds) (1994) *Evolutionary Economics and Chaos Theory: New directions in technology studies*, Pinter, London.

Teknova, *Sistema di monitoraggio della ricerca scientifica e delliinnovazione tecnologica in Lombardia*, Ricerca IRER cod. 93.64, Milano, 1995.

The Royal Society. (2006) *Digital Healthcare: The Impact of Information and Communication Technologies on Health and Healthcare*, The Royal Society.

UNDESA. (2007) *Intergenerational Solidarity: Strengthening Economic and Social Ties,* Expert Group Meeting and Background Paper, UN Department of Economic and Social Affairs: Division of Social Policy and Development, October 2007.

Venne R. (2005) *Mainstreaming the concerns of older people into the social development agenda,* United Nations Secretariat: Division for Social Policy and Development.

Viale, R. (1998) *Tripla elica in Lombardia: evoluzione nel raccordo tra ricerca, impresa e governo*, in Conferenza Regionale della Lombardia - Scenari dello Sviluppo, Milano, 4 Marzo 1998.

Viale, R and Ghiglione, B. (2005)*The Triple Helix model: a Tool for the Study of European Regional Socio Economic Systems*, Fondazione Rosselli publication.

Wilson, M and Warnock, K. (2007) *At the heart of change: the role of communication in sustainable development and the case for communication in sustainable development*, Panos Publications.

Yeandle, S and Buckner, L. (2007) *Carers, Employment and Services: time for a new social contract?,* Carers, Employment and Services Report Series, 6.

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ECOSYSTEMS OF TRIPLE COLLABORATION

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Why not give a spark of new life to the university-business collaboration by erecting an impressive research and development center of a global company in the middle of a classical university campus? Or how about moving a university faculty in the middle of a governmental campus? Serious opposing arguments can be expected from the basic research puritans and the networked academics.

These provoking ideas were presented some three years ago by Professor Francesco Profumo, Rector of the Politecnico di Torino, from the home base of *Fiat*, at the EU meeting in Brussels discussing the relationship between the universities, business life and industry. His dream became a reality in Torino, Italy, where they launched a joint master's degree agreement between the University of Windsor and the Politecnico Di Torino Masters Program to work on research and development projects with Chrysler and Fiat.

My own work has been conducted safely within the hard walls of the university, but we have been collaborated with our external partners via shared processes. Over thirty years with businesses and government units, we connected the university-based basic research and teaching activities with their core processes. Typically, direct competitive benefits were created to our partner companies or governmental units. In some cases our role has been to pass over the knowledge and experiences learned from business collaboration to our governmental partners.

Coming from a small research group (15-20 members) and reluctant faculty, we have not conducted industry wide exercises but rather built collaboration in micro-scale. However, the learning experiences have been intensive, long-lasting, often on global markets, built on team trust, and the collaboration has been highly productive and socially engaging. Our young students and

researchers have gained early work experiences with ambitious business and technology professionals.

Kick-Starting the Knowledge Engine

Originally we considered this partnering as the construction of *a knowledge engine* that runs on the shared view of the objectives, mutual interests, and processes with the participating partners (Nyman, 2008). However, an ideal interactive partnering and collaboration can be seen as an ecosystem living on the energies of both parties. A dynamic perspective is necessary because we do not know exactly what kind of formal structures and value networks in the partners' environment evolve over time.
Not so long ago, the universities were expected to flourish behind their basic research walls and only every now and then send knowledge-smoke signals to color the sky of the commercial world. Some other organizations could then be alerted - because of the profit forecasts - and start commercializing the promising knowledge. This separatist view is not rare even today. Furthermore, a popular belief, which many first-year students learn from the hidden connotations of the academic teacher talk, is that the true geniuses and masterminds live in the basic research labs.

Still today it is typical to separate the history of science from the history of innovation and technology. You are not expected to launch your scientific career in a garage, which is a heroic place only for innovative technologists like Steve Jobs and the founding fathers of HP. But the boundaries between academic thinking and the acts of free creativity are changing, and the garage spaces are getting increasingly intelligent. The young-generation of connected researchers are gaining new knowledge channels to satisfy their curiosity and it is easier than ever before to observe and participate in scientific problem solving outside their own discipline.

How to avoid the paranoia between the traditional academia, business, and the public sector? Compelling conceptual models are needed to give life to the border-crossing and mutually productive collaboration - without hurting the position and strengths of ambitious basic research.

Ecosystem Exercises and Experiences

We need long-lasting processes for academia and its partners in business and public sector organizations. As a practical example, nine years ago we www.poem-research.org (Psychology of Evolving Media and technology, POEM) joined the r&d process environment of Nokia to collaborate with their mobile phone camera group. When they accepted us as a partner, due to our theoretical approach, a significant process transformation started taking place in the way subjective image quality studies were conducted to support their camera development and the tuning processes involved. This collaboration continues and has sustained numerous organizational changes to contribute to the way we, and our partners at Nokia, now think about the theory of image quality and about the camera and camera component test methods.

The results have been simply magnificent, and I cannot overestimate the joy involved in the work. But had the collaboration been a series of separate research orders from Nokia and according to the requirements as they then saw them, most of the now achieved knowledge gains would have been missed on both sides and it would have been too slow a feedback process for their r&d.

The other ecosystem example from POEM concerns second and third year students from psychology and economics, where we integrated our teaching of organizational psychology and project management course at Aalto University with the r&d activities of the National Tax Office (NTO) in Finland. In parallel with the normal course program, courseware, and teaching practices, we co -designed an extensive set of concepts for improving the NTO services and their net presence, and evaluated them together with NTO. We tuned the approach so that it was relevant in this specific multi-disciplinary course context. After that, we continued the work again in the following term to sharpen it up with the new participants of the same project management course.

The first outcome during the three-months exercise was fourteen new network service concepts (selected from about 100 candidates generated) that the NTO then invested in and hired our students to work on them. A collaboration process was created, including a new knowledge forum and a personal network with the NTO. All the work at POEM was free of charge for NTO and only daily material costs were covered. It was important to build the ecosystem without direct economical requirements and to allow certain flexibility from the partner side as well. Later it facilitated further planning for collaboration and preparation for true consultancy activities.

There is a strong incentive to keep the functional bonds between the university and its partners alive, even when there are no direct economical resources available. The partners can view this as an investment in future competence building that is part of their social capital. Breaking the bonds even for a short period of time can make the regaining of this knowledge and relationship capital very expensive.

In our case, the work has contributed significantly to the competitive edge of our partners, introduced product development guidelines, generated valuable end-user data, and as an interesting spin-off, produced straightforward economical gains of several M€ to the Finnish NTO. We have often recognized acute possibilities for start-ups but have not had strong support for launching them.

But there has been serious resistance to do all this. As a recent example, having worked hard for twenty years to improve the visual quality testing methodologies with world-class partners in the imaging and print industry, and shown how it has e.g. directly helped to build the globally top-quality cameras, this work was criticized by the anonymous university evaluators that "they have moved too fast to the applications." We have silently wondered what would have been slow?

Small Business Potential

It would be wise to offer university collaboration for small businesses as well (having less than 500 employees in the US). It appears that universities have not learned to appreciate this type of activity as a serious national and societal investment. However, small businesses represent an extremely productive environment

for r&d collaboration. In the US, for example, they produce thirteen times more patents per employee than large companies. Innovations in small firms are twice as closely linked to scientific research as in large firms. Furthermore, they hire 43% of high-tech employees and have been responsible for 65% for new jobs created over the last seventeen years http://web.sba.gov/faqs/faqIndexAll.cfm?areaid=24. The energizing potential of the small business-university ecosystems will be a gold mine of the future for the super-fast and knowledge-rich r&d.

Building Collaboration Ecosystems

It is wise to invest the economical project gains in the basic research work and its infrastructure in other elements that feed the ecosystem. Furthermore, students should not work for free in full-time projects. Material rewards maintain motivation and a sense of fairness. Organizational and legal forms that support this should be developed, especially to encourage the young academic generation that have an interest in r&d and the application or businessss-oriented partnering.

Small businesses, start-up consortiums, forums and programs, partially owned by the university and the participating students and researchers, could work as fast model environments. They provide quick and realistic learning lessons in business and project skills and provide a sense of realism to the university management about business and governmental collaboration. Indeed, why not invest in small businesses, public offices and startups in the middle of the classical university campus as some technical and business universities have done? As an example from Finland, Aalto University has a rather wide scale of activities covering the support from design up to mass production processes and start-up support, e.g. http://www.aaltodesignfactory.fi/ and in http://startupsauna.com/en/.

Guidelines for Building a University-based Ecosystem

One could think of the experiences from Silicon Valley as a general model for building ecosystems between businesses and the universities. But the "exact copy" strategy does not apply here. It has to start from the groundwork, and seriously involve the student life. Silicon Valley is not only a business and technology haven; it is a hub and home for inspiration, involvement, and entrepreneurial interaction, with an immaterial entrance fee: a potential and willingness to work on and share exciting new ideas. What happens when new knowledge is actually shared and offered is another story.

Here are some guidelines according to which I believe it is profitable to build the future university-based ecosystems for basic and applied research, in the spirit and context of a healthy Triple Helix:

1. Establish firm economical and spiritual ground for basic research that is not threatened by economically successful external partnering activities. This is an absolute demand. Applied research can and must make profits relatively fast. Its economical and human time constants are significantly shorter than in ambitious basic research.
2. Build an economic environment with an ethically sustainable incentive code and respect for the individual researcher. This is crucial in integrating basic research and industry/business oriented application work.
3. Experiment with new forms of ownership where material and immaterial capital values are in balance. Today this is not true, and anyone with the slightest material investment can expect significant profits while a major immaterial investment (time, knowledge, experience, network) is treated haphazardly.
4. Span a social platform that encourages cultural mobility within the research community. Dominating paradigms become methodologically, economically, and in their governance closed systems that should be opened by suitable incentive systems.
5. Educate the public sector, industry, and business life of the potential, cultures, and development processes in these new environments.
6. Teach business representatives to make wise orders and purchases from the university units and research teams.
7. Help the young generation of students to adopt the multi-dimensional value system that this unavoidable development requires.

References

Etzkowitz, H and Ranga, M. (2009) From Spheres to Spaces: the Dynamics of the Triple Helix Concept. In Rickne, A, Laestadius, S and Etzkowitz, H (Eds), Regional Innovation Systems: The Swedish Experience of Policy, Governance and Knowledge Dynamics.

Nyman, G. (2008) Future jobs are created where knowledge is created. Presentation at UNICA, Paris, www.ulb.ac.be/unica/phd-coords.html).

EU University Business Forum, Brussels, 2011. http://ec.europa.eu/education/higher-education/forums_en.htm.

US Small Business Administration. http://web.sba.gov/faqs/faqIndexAll.cfm?areaid=24.

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THE UNIVERSITY IN NATIONAL DEVELOPMENT: THEORETICAL PERSPECTIVES ON A SECOND ACADEMIC TRANSFORMATION, LINKED TO A THIRD CAPITALIST INDUSTRIAL REVOLUTION AND THE 'MISSING' IDEA OF A QUADRUPLE HELIX

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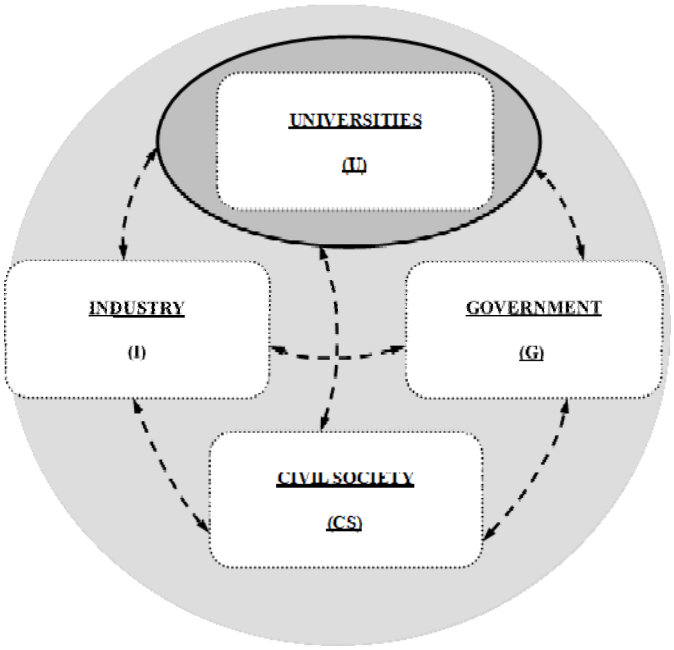
INTRODUCTION AND CONTEXT

For almost a decade after 2000, I tracked the development of eleven 'application-oriented' research groups at South African universities in the Western Cape.[1] This investigation took place in the new, post-1994 South Africa, which has moved from a relatively closed to an open economy, from a state of siege to a constitutional democracy. These massive shifts have occurred in the context of what I term a global Third Capitalist Industrial Revolution, which has been unfolding since the 1970s (see below). This takes on special characteristics in South Africa given its legacy of racial division, deliberate class stratification and underdevelopment of major sectors of society - features which are particularly linked to what I argue below as the crucial importance of a 'Quadruple Helix' in reference to civil society and its deep-rooted economic poverty, faced on a daily basis by most of this country's people.

In this context of global scaffolding of the South African research system, my research focused on the role of 'use-oriented research': of universities in enhancing a *broadly-conceived* 'socio-economic-cultural' development of our society. In essence my research sought to map academic knowledge in relation to what might be termed the *social responsiveness* role (economic/social/cultural) of universities - or put another way, the *engaged scholarship* of academics at our universities. This is with respect not only to what has been termed (by Etzkowitz and Leydesdorff 1999) relationships of the 'Triple Helix' (i.e. U-I-G or university-government-industry) but also to what I have termed relationships of the 'Quadruple Helix' (i.e. U-I-G-CS or university-industry-government-civil society).

My analysis here focuses on four sets of ideas which I have found fundamental in facilitating an understanding of my eleven Western Cape research groupings during empirical investigation in the period 2000-2008. In tracing the trajectories of these eleven, I developed a number of theoretical perspectives - essentially 'grounded theory' linked to the analysis of the cases - in order to make sense of my data. Thus the discussion below examines the four central concepts which emerged as valuable during the analysis phase: (i) Use-Inspired Basic Research, (ii) a Second Academic

Fig 1 The idea of a future Knowledge Economy-Society: university as 'a knowledge centre and innovation driver' based on



U-I-G-CS research linkages of equality
Source: Cooper (2011:355)

[1] This article is based on a summary of some of the core theoretical perspectives of my book *The University in Development. Case Studies of Use-Oriented Research* (Cooper, 2011). Part 1 of the book, entitled 'A global Second Academic Transformation: in symbiosis with a Third Capitalist Industrial Revolution', deals with these perspectives; Part 2 is entitled 'Case studies [of research groupings] at the universities of the Western Cape', whose empirical analysis is not explored in this article. Throughout this article, I use the term Second Academic *Transformation* to distinguish this from my concept of the Third Capitalist Industrial *Revolution* but essentially my idea of Second Academic Transformation is very similar (see below) to Henry Etzkowitz's own concept of a 'second academic revolution' (Etzkowitz, 2001).

Fig 2 Stokes Quadrant Model of Scientific Research

		Is the research inspired by considerations of use? **No**	*Is the research inspired by considerations of use?* **Yes**
Is the research inspired by a quest for fundamental understanding?	**Yes**	**PBR** Pure Basic Research (exemplar: Niels Bohr)	**UIBR** Use-Inspired Basic Research (exemplar: Louis Pasteur)
	No		**PAR** Pure Applied Research (exemplar: Thomas Edison)

Adapted from Stokes, 1997: 73, Fig 3–5

Transformation, (iii) a Third Capitalist Industrial Revolution, and (iv) a Quadruple Helix. It is important, nonetheless, to contextualise these concepts by briefly commenting on the nature of this Western Cape research.

My data collection methods were based on rich case study data, derived from in-depth semi-structured interviews and document collection with respect to the eleven research groupings, spread across the universities in the Western Cape and including universities of technology.[2] The mode of data collection was fairly unusual for qualitative case studies: the original interviews, with a director and some researchers of each research centre or unit, were undertaken in 2000; then as a follow-up study, each of the centres/units was re-interviewed early in 2005, and again revisited for interviews and documentary updates in 2007. This fascinating material thus provided a historical profile of the changing nature of the eleven research groupings over the period 2000-2005-2007 - showing how, usually quite unexpectedly, some research centres and units significantly enhanced their research activities, while others experienced serious problems. Moreover, this study across time provides valuable insight into the factors that are *blocking* (or sometimes enhancing) the development of use-oriented research at South African universities.

Towards the end of the analysis, around 2007, I came to define 'use -oriented research' as a combination of what Donald Stokes (1997) terms 'pure applied research' (PAR) and 'use-inspired basic research' (UIBR), i.e. PAR+UIBR. It is pertinent to turn to the concept of UIBR before exploring the other three central concepts that follow - though, as will be observed at the end, the four as a whole are interconnected and their meanings are constructed partly in relation to one another.

The Idea of Use-Inspired Basic Research (UIBR)

The idea of 'use-inspired basic research' from the work of Stokes (1997) significantly influenced the whole framework of my final study report.

Essentially, Stokes argues that we need a concept of UIBR located between (or more accurately, in the top right quadrant of his Figure) the traditional ideas of PBR (pure basic research, "the quest for understanding without concern for practical use", 1997:73) and PAR (pure applied research, "extremely sophisticated, although narrowly targeted on immediate practical goals", 1997:74). Stokes mentions the example of Louis Pasteur, whose work, he argues, was rooted in UIBR, "[which] includes basic research that seeks to extend the frontiers of understanding but is also inspired by considerations of use" (1997:74).

This idea of UIBR helped me to deal with a puzzle in relation to data emerging from the eleven cases. Only one case had been selected as an illustration of pure basic research, or of what I termed 'curiosity-oriented research'. The other ten were selected in 2000 as an illustration of what I then termed 'application-oriented research'. However, I increasingly had to confront the fact that most of these ten selected research groups were not only undertaking applied research (PAR, in terms of Stokes's definition), but also a form of research that, for want of a better term, I initially called 'fundamental-applied' (see Cooper 2005 for an early use of this idea). This was because I observed that some of their research combined, in a complex unity, fundamental research work with applied work. Stumbling onto Stokes's insightful work after 2005 helped me enormously to crystallise these ideas around the concept of UIBR (a sharper concept than 'fundamental-applied'). Most importantly, it helped me to theorise another empirical finding which had emerged from the data: that, especially at the research-intensive universities of the Western Cape (eg Universities of Cape Town and Stellenbosch), it was often UIBR that industry and government bodies *sought most* from research centres/units located at the universities, while industrial and other external organisations primarily sought PAR from the two Universities of Technology (Cape Technikon and Peninsula Technikon).[3] This suggested that what was most valued especially by Industry, with respect to research-intensive universities, was not applied research in general but, more specifically, Use-Inspired Basic Research. This opened up a further puzzling question: what

[2] My investigation covered the three universities, and two universities of technology (termed 'technikons' until 2004), of the Western Cape. Unless otherwise specified, I utilise the term 'universities' throughout to refer to both types of universities.

was happening in South Africa, and internationally, which was creating a much greater interest in the 'output' of UIBR from our universities, especially those with internationally-rated researchers?

The Idea of a Second Academic Transformation

Part of the answer to the latter question, I would argue, can be inferred from the idea of a post-1970s 'Second Academic Transformation' - a concept that is derived from the work of Henry Etzkowitz and colleagues.[4] In essence, Etzkowitz suggests that we are seeing at universities internationally (including, I argue, in South Africa) a significant emergence of a university Third Mission: a mission to contribute to the socio-economic-cultural development of society.[5] He argues that in the nineteenth century we saw the emergence of a First Academic Revolution (transformation), which linked the earlier (feudal) First Mission of *teaching* to a new Second Mission of *research* (focusing on PBR, I would add). And now, especially since the last quarter of the twentieth century, he argues that we have been witnessing the emergence of a Second Academic Revolution (transformation) in universities globally - in other words, the addition to the First and Second Missions, of a new Third Mission, of research contributing to *societal development*. I would assert moreover, that this new Third Mission is itself a combination of UIBR+PAR, i.e. what I have defined as 'use-oriented research', with varying mixtures of UIBR and PAR, depending on the context and form of the engaged scholarship by university academics.

Importantly with regard to my study, the empirical data from the eleven cases strongly supported the hypothesis of such a Second Academic Transformation: Western Cape universities have been showing evidence of an increasing orientation towards use-oriented research since the 1980s, albeit in complicated and diverse ways. Moreover, 'clients' for this research are coming mainly from industry and national government. In addition, my data suggested that the Third Mission at our universities is strongly supported by industry funding in South Africa (even more strongly, relatively speaking, than at universities in the US and Europe). Thus although South African national government funding still provides around sixty percent of expenditure in HERD (Higher Education Research and Development, see Organisation for Economic Co-operation and Development [OECD] 2007:92),[6] such government research funding (compared to our industry funding) is proportionately weaker than in OECD countries (OECD 2007:192). This suggests that core funding for South African university research by government is insufficient, leading to much fragility and fracturing of the research enterprises of the eleven research groupings which I investigated. In other words, at our South African universities over the past three decades we have certainly seen a mushrooming of new forms of use-oriented research centres and units and so-called 'centres/networks of excellence', oriented primarily towards a university Third Mission of economic development, often with industry as a major source of their funding. But most research groups suffer from 'chaos alongside their creativity' (Cooper 2001), with the lack of sufficient funding especially from government a major factor in effecting such relative 'chaos'.

The above discussion leads to a further question: if there has been a significant rise in the 'weight' of the Third Mission at universities globally as well as in South Africa from the last quarter of the twentieth century, and if this has also been linked to a rise in the relative importance of industry funding for university research, why has such a shift occurred? In relation to the empirical data from the Western Cape case studies, and with regard to data of university trends internationally pertaining to the expansion of a Third Mission of 'economic development', I suggest that an important part of the answer relates to the emergence of what I term a Third Capitalist Industrial Revolution since the 1970s.[7]

The Idea of a Third Capitalist Industrial Revolution

My perspective here derives from certain sociological theories of globalisation. Essentially, I argue that the post-1970s global Second Academic Transformation is itself linked to (and essentially 'driven' by) a Third Capitalist Industrial Revolution.[8]

I view this Third Industrial Revolution, as impelled by Transnational Corporations (TNCs) and their networks, as a new form of economic organisation.[9] These new socio-economic relations of

[3] As noted earlier, by 2004 the technikons throughout South Africa had been renamed 'universities of technology'; in the Western Cape, moreover, these two technikons merged into CPUT, the Cape Peninsula University of Technology after 2005 - with a dichotomy emerging between research-intensive universities centred on UIBR and universities of technology centered on PAR.

[4] In my book (2011:especially Chapters 1-2), I raise a set of questions and issues with respect to the concepts of Etzkowitz and his colleagues, especially (i) around the idea of the Triple Helix in relation to a 'Quadruple Helix', (ii) the lack of differentiation between 'UIBR' and 'PAR' in relation to their concept of a university 'Third Mission' (see below), and (iii) the extent and uniformity of the Second Academic Revolution/Transformation globally. Nonetheless, as is argued here, the fruitfulness of the latter concept in particular (e.g. in Etzkowitz 2002, for his empirical analysis of the universities of MIT and Stanford), is not disputed.

[5] My stress, as noted above, is on broad 'socio-economic-cultural' development with respect to the Third Mission, not only the narrower 'economic development' as stressed often by the I of the 'U-I-G' Helix. This is particularly relevant for the university-based Social Sciences, and even some of the Natural Sciences, in their relationship to Civil Society (CS) in the 'U-I-G-CS' matrix (see below).

[6] In my book I analyze how evidence suggests a general rise, after the 1970s, in the relative proportion of industry-based funding (i.e. the proportion of industry funding of HERD) for research-intensive universities in the US and Europe (though even more strongly in South Africa); I argue also that this is linked to the increase in forms of university research based on *larger* research centres/groupings and 'centres/networks of excellence' (Cooper 2011:Chapter 3; see also Etzkowitz 1992 and 2002, for links between the growth of the university Third Mission and the emergence of larger research centres/groupings at universities). The latter links - a focus of my book in Part 2 – cannot, however, be explored here.

[7] The empirical evidence for the expansion, internationally, of the Third Mission at universities and of (i) the parallel rise of industry funding as a proportion of expenditure within HERD and (ii) the concomitant international mushrooming of new forms of university research centres/units and centres/networks of excellence involved particularly in Use-Inspired Basic Research, is discussed in Part 1 of my book. Here the focus is only on the theoretical element, viz. the emergence of a 'Third Capitalist Industrial Revolution' from the last quarter of the twentieth century.

Fig 3 Capitalist very long-waves; comprising sets of technological forces and socio-economic relations of production

Capitalist industrial revolution	Major technologies ('technological regime')	Capitalist form of economic organisation	
First (1770s/1780s) (led by Britain)	Initially textile machinery, iron working, water power, pottery, etc. Later (from 1830s) steam engines, railways, etc.	Small family firm	*First academic transformation (early 1800s till early 1900s in Europe and USA, followed globally elsewhere)*
Second (1870s/1880s) (led by Germany)	Initially electricity, chemicals, steel, etc. Later (from 1920s) automobiles, aircraft, synthetic materials etc.	National share-holding corporation	
Third (1970s/1980s) (led by USA)	Initially ICT, biotechnology, optical fibres, material science, nanotechnology, etc. Later ?	Transnational corporation-cum-networks	*Second academic transformation (takes off from 1980s, symbiotically linked to the international 'knowledge economy-society')*

production are *interconnected with* new cutting-edge technologies like ICT and biotechnology (part of what I term the new, post-1970s 'technological regime', Fig 3), which are inconceivable without university-based research. The new (Third) industrial revolution is itself therefore closely related - or what I call 'symbiotically linked' - to the Second Academic Transformation at universities: this post-1970s industrial revolution is impossible without a 'knowledge economy-society' in which university-based research plays a vital role. For example, the new PCs and cell-phones are impossible without modern university-based physics and its theories of electronics based on quantum physics, and the new biotechnology is rooted in genetic theories of DNA derived from universities' PBR (and similarly for the new material science and nanoscience, shown in Fig 3). This is unlike the First Industrial Revolution, where new inventions (eg textiles, steam) were based around 'practical men' *outside* universities. It is also unlike the Second Industrial Revolution where new developments in electricity and chemicals for example were, at times, linked to university laboratories, but where nonetheless (i) these discoveries were rooted in PAR and not shaped by fundamental theory-based research (ie not significantly shaped by PBR and UIBR); and (ii) other factors (besides university knowledge) were more important in shaping this (Second) industrial revolution, eg the rise of joint stock companies in manufacturing to facilitate the transition from family firm to national corporation, the role of the colonies in providing Europe with raw materials, new forms of semi-skilled production systems like 'Fordism' etc. For this reason, the First Academic Transformation is shown as not directly linked to either the First or the Second Industrial Revolution: this academic transformation thus sits uneasily between these two industrial revolutions in Fig 3. Admittedly, science increasingly became linked to the later phases of the Second Industrial Revolution (eg with respect to aircraft technology, synthetic materials, in Fig 3), but never as centrally as is the case in the Third Industrial Revolution - where a 'knowledge economy-society' and university PBR and UIBR (with the latter as core of the Second Academic Transformation) are absolutely central factors in the industrial revolution after the 1970s. Hence in Fig 3, the Second Academic Transformation is shown as directly connected to this post-1970s 'knowledge economy-society' revolution.

In essence, therefore, the idea of a Third Capitalist Industrial Revolution implies that university PBR and UIBR have been, and will be in future, indispensable for the unfolding of this global industrial revolution. The new, post-1970s 'knowledge economy-society' is therefore viewed as an important breakpoint (a 'revolution') in relation to the earlier modern industrial societies. In addition, the universities (following Etzkowitz's arguments about these) are given

[8] In my construction of Fig 3 I used the analysis by Dicken (2003: 88) of a series of fifty-year economic growth cycles (1780-1830-1880-1930-1980), known to economists as Kondratiev long-waves, but I have 'joined up' each pair of fifty year cycles, making three nodes with 'very long' - 100 year - waves. I refer to each of these nodes or 'moments' as First, Second and Third capitalist industrial revolutions. These revolutions are each crucially shaped by what I term different 'capitalist forms of economic organisation', namely the small family firm, the national share-holding corporation, and the transnational corporation-cum-networks - again as shown in Fig 3. I found Dicken's technological descriptions (2003: 87–89) for each Kondratiev cycle to be valuable, and the most important technologies listed by him for each period have been included in Fig 3.

[9] See especially Dicken (2003:238-273) for a discussion of TNCs and how they are linked to a complex network of smaller firms - what he calls 'webs of enterprise: the geography of transnational production networks'.

a central place here: the Second Academic Transformation and its associated Third Mission of the university in socio-economic (and potentially, cultural) development, implies that university-based knowledge is one of the main factors shaping this industrial revolution. In addition, the category of 'capitalist' is important: implicitly here, there is a functionalist explanation, namely, that in the late 1960s/early 1970s, there was a general slowdown in the global capitalist economy; and in order to 'lift out' of this downturn, a new form of economic organisation (transnational corporation-cum-networks) became consolidated from the 1970s/1980s. At the same time, these TNCs increasingly sought profitability by turning to universities for their PBR and UIBR, in order to facilitate the development of innovative products (based especially on ICT and biotechnology, initially) for their global markets.[10]

The idea of a global Third Capitalist Industrial Revolution provided, moreover, new ways of looking at the Western Cape case studies of research groupings within my study. On the one hand, it provided new insights into why there has been such a significant mushrooming of new and larger research centres and centres/ networks of excellence (and even smaller use-oriented research units) in universities and universities of technology of the Western Cape (and South Africa as a whole), since the 1980s/1990s. On the other hand, it provided insights into why the research missions of most of my eleven cases - of use-oriented research for primarily economic development, in other words, the Third Mission according to Etzkowitz - were so frequently oriented towards industry and sometimes national government as clients. I, therefore, found that what Etzkowitz and Leydesdorff (1999) defined as the Triple Helix of U-I-G research relationships, was alive and strong within the majority of my case studies. And this is surely linked in part to the impact on South Africa of the global Third Industrial Revolution, which fosters closer linkages with respect to University-Industry (U-I) research relationships, with the latter themselves facilitated and co-ordinated by national government (G).

But this then posed a further question: why were research links of University research groups with Civil Society (CS) organisations - defined as local community and labour and women's organisations, non-governmental organisations (NGOs), local and regional government and municipal bodies etc - so much weaker than the Triple Helix U-I-G linkages? It was puzzling, therefore, why, amongst the eleven cases of Western Cape research groupings, I found generally weak U-CS research links: only 2-3 cases demonstrated any significant research work for such CS organisations alongside the Triple Helix.

The (Missing) Idea of a Quadruple Helix, incorporating University-Civil Society (U-CS) Research Linkages (Fig 1, above)

When someone from the 'third world' like myself peruses international academic literature on research policy and science and technology studies, including leading journals such as *Research Policy* or *Science and Public Policy*, one is struck by a gap - a significant absence - in discussions of serious scholarly research work by academics in relation to links between universities and labour/civic/ community organisations. Many articles, in contrast, reflect what might be classified as an 'innovation anxiety': particularly dominant over the past two decades in the USA and Europe, it is associated with heightened global economic competition, with a resultant, almost exclusive, focus on how Industry can become more innovative and how University and Government might facilitate this. This links also to what appears to be the *major discourse* with respect to research policy, both internationally and increasingly in South Africa: the discourse revolving around the idea of NSIs (National Systems of Innovation), and how Triple Helix research relationships need to be the central focus of national policy initiatives to enhance each country's NSI (see Sharif, 2006, also for example, Dept of S & T, 2008 in South Africa).

There thus seems to be far less reference to, and theorising about, what I call the Quadruple Helix (Fig 1), in which University-Civil Society (U-CS) research relations are incorporated equally into the schema.[11] The current concept of the Triple Helix in effect relegates the idea of U-CS research linkages to the periphery (Fig 4, also Cooper, 2009:154).

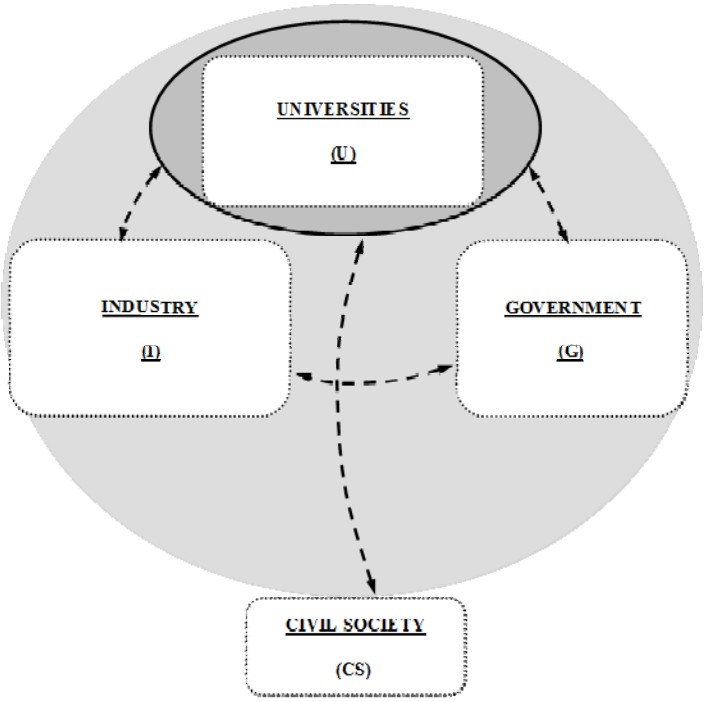
It can be argued that this dominant Triple Helix approach fails to address especially how our South African universities (and many universities in developing countries, and even numerous universities in countries with highly developed economies) might *enhance* their research work linked to the needs of CS structures, like trade unions and labour movements, women and community organisations, regional and local government bodies etc. Moreover, U-CS relationships should encompass not only economic development but also broader social and cultural development themes (the latter have seldom historically been addressed by the Triple Helix literature). It must be stressed that there is no reason why such U-CS research relations cannot be developed alongside existing U-I-G relations into a different schema of 'Quadruple Helix' as illustrated in Fig 1 earlier - much needed to facilitate and enhance our national socio-economic-cultural development in a *holistic* way.

Thus looking into future global challenges and possibilities, I do not see why the twenty-first century cannot experience an increasing spread of new technologies derived from a much wider range of academic disciplines and fields, including the social sciences. These 'technologies' (innovative ways of developing practices or products) might include, for example, new and sustainable forms of transport and housing, new modes of city planning, new socio-economic strategies for dealing with environmental problems, innovations in

[10] This functionalist argument is discussed more fully in Cooper (2011:Chapter 3).

[11] I suggest too, that in earlier commentaries by Etzkowitz and colleagues around the issue of a possible 'fourth helix' (eg Leydesdorff and Etzkowitz (2003), Leydesdorff and Ward (2005) and Etzkowitz and Zou (2006), this 'fourth' component of 'the Public' has been treated as subordinate to the three components of the Triple Helix. However, in recent work, for example Etzkowitz 2013, he has incorporated new ideas of what he terms 'civic entrepreneurship' (alongside 'commercial entrepreneurship') and also of 'cultural and social development' via the role of the social sciences and humanities (alongside 'economic development' via S&T disciplines), while nonetheless (in my view) still focusing on U-I-G relations without an in-depth consideration of social organisations/movements (as part of CS) and how they might interconnect with University *research* (rather than with university teaching as in Etzkowitz 2013).

Fig 4 The 'orphan U-CS link, alongside the Triple Helix of U-I-G



work organisation and employment creation, development of new cultural forms, and so on - in addition to the existing technologies listed in Fig 3 which have been at the cutting edge of the Third Capitalist Industrial Revolution. All these social science and humanities-linked technologies could, moreover, have a major and very positive impact on the lives of poor people (the vast majority, in a country like South Africa).

Surely, therefore, it is possible for university research and scholarship from such diverse academic fields to play a major, sometimes even central, role in facilitating the development of a new and more holistic 'technological regime' (the term used in Fig 3) over the next decades? And surely these socio-economic and cultural innovations will not be meaningful, unless civil society (CS) organisations and groups are treated not only as central 'clients' for many of these technologies, but - as importantly - are helped to *engage with* universities in diverse collaborative partnerships, so that they participate in shaping the nature and form of these technologies?

In this regard it can be noted that issues pertaining to University-Civil Society research relations have recently begun to emerge more strongly in public debates about the role of university research in South Africa - about 'our universities and the public good' - with respect to how such research might serve the needs of the mass of poor people within civil society (Singh 2001, Cooper 2012). Historically too, during the anti-apartheid struggle years of the 1970s and '80s, and also later in the policy engagement years of democratic transition in the 1990s - numerous university research groups became involved in substantial 'social responsiveness' research and other scholarly support relationships including teaching off-campus courses, research and advice on policy documents, workshops on environmental issues and so on. These were mainly with groups within trade union, women and civic organisations, local government bodies and even political organisations.[12]

Thus for South Africa, and numerous other countries such as in Latin America and Asia, there has been significant involvement of university academics with what might be termed the new 'social movements'.[13] In the USA too, since the 1990s there has been growing debate around the issue of what has now come to be defined as 'engaged scholarship', led by scholars in a journal like JHEOE (Journal of Higher Education Outreach and Engagement), also in some recent journals of 'community engaged scholarship' emerging in the USA), and such American university scholars have in 2011 united under a new organisation ESC (Engaged Scholarship Consortium, previously NOSC or National Outreach Scholarship Conference). This holds annual conferences and reaches out to new international organisations such as The Talloires Network, which in a similar way seeks to enhance linkages of academics with a 'civic engagement movement' on a global level (The Talloires Network Newsletter 2013).

Perhaps one of the most significant thrusts for change around the idea of U-CS relationships, in relation to local regional development, might come eventually from the OECD organisation itself. This organisation has historically played a major role in the spread of the concept of 'National Systems of Innovation', including ideas about the components of the Triple Helix driving innovation.[14] Yet over the past decade or so there has emerged within the OECD a new stress on 'regional systems of innovation' (OECD 1999) and allied concepts such as 'learning economy' and 'learning region'. While much of the literature on regional systems of innovation has viewed the university's regional role primarily in economic terms, Gunasekara suggests that a more encompassing literature around university engagement has begun to see the university "making a broad range of contributions to civil society, for example in cultural and community development" (2006: 142; also recently Etzkowitz 2013, on local/regional development).

Thus, support for my idea of a Quadruple Helix appears to be coming indirectly from a range of groupings spread across the globe. Whether this growing international debate about the absent University-Civil Society relations will gain momentum, and what specific forms the debate will take (economistic and/or social-cultural, industry and/or community organisations etc.), are still open questions. Nonetheless, the above argument suggest that analysts of a Triple Helix need to reconceptualise Civil Society, such that CS is drawn in from its current orphan status into a transformed place within a more holistic Quadruple Helix. Only in

[12] Perhaps the best insight into these activities can be gleaned from the journal, the *South African Labour Bulletin,* from the 1970s until the present day. The SALB was itself an initiative of (mainly) university academics working in relation to the emerging trade union movement, with its first issue in April 1974 (see SALB 2004, special edition entitled '30 Years On').

[13] See also the debates in my discipline of Sociology during the last decade, around the idea of 'traditional and organic *public sociology*' (Burawoy 2005, also 2010).

[14] See Sharif (2006) for a discussion of the 'NSI concept' from the 1980s and its influence on OECD organisational thinking.

this way, I believe, will the burning problems of mass poverty and unemployment, inequality, popular democracy, and social wellness - which are such urgent challenges at the Western Cape regional level where my study took place, but also at most regional levels across the 'third world' and even in many regions of the 'first and second worlds' - be able to be confronted over the coming decades of the twenty-first century. We can, thus, no longer rely on the 'trickle down' theories of neo-liberalism - about wealth flowing down as a result of the commercial entrepreneurship of globally-organised Industry - which have dominated international economic thinking about what I have termed the Third Capitalist Industrial Revolution since the 1980s.

REFERENCES

Burawoy, M. (2005) For Public Sociology. *American Sociological Review*70(1):4-28.

Burawoy, M. (2010) Public sociology in age of Obama. 148-160 in H E Fitzgerald, C Burack and S D Seifer (eds.), *Engaged Scholarship. Comporary Landscapes, Future Directions.* Volume 2: Community-Campus Partnerships. East Lansing: Michigan State University Press.

Cooper, D. (2001) Creativity and chaos: Preliminary report on the anatomy of research centres/units at higher education institutions in the Western Cape. University of the Western Cape Papers in Education: 1(December):46-55.

Cooper, D. (2009) University-civil society (U-CS) research relationships: the importance of a 'fourth helix' alongside the 'triple helix' of university-industry-government (U-I-G) relations'. *South African Review of Sociology* 40(2):153-180.

Cooper, D. (2011) *The University in National Development. Case Studies of Use-Oriented Research.* Human Sciences Research Council (HSRC) Press: Cape Town

Cooper, D. (2012) The UCT idea of 'social responsiveness: engaged scholarship must be at its conceptual core for academic staff. 26 -37 in Social Responsiveness Report 2010, University of Cape Town. Accessed May 2013. www.uct.ac.za/downloads/uct.ac.za/services/ipd/sr/annual/SR_report_2010.pdf

DST (Department of Science and Technology). (2008) *Ten-Year Innovation Plan: Innovation towards a Knowledge-Based Economy 2008-2018.* Pretoria: Department of S & T.

Dicken, P. (2003) *Global Shift. Reshaping the Global Economic Map in the 21st Century*. London: The Guildford Press.

Etzkowitz, H. (1992) Individual investigators and their research groups. *Minerva* 30:28-50.

Etzkowitz, H. (2001) The second academic revolution and the rise of entrepreneurial science. *IEEE Technology and Science Magazine* 20(2):18-29.

Etzkowitz, H. (2002) *MIT and the Rise of Entrepreneurial Science*. New York: Routledge.

Etzkowitz, H. (2013) Can a teaching university be an entrepreneurial university? Civic entrepreneurship and the formation of a culture cluster in Ashland, Oregon." Working Paper No 11, Research Working Paper Series, Centre for Innovation Management and Research (CIMR), Birkbeck, University of London.

Etzkowitz, H and Leydesdorff, L. (1999) Whose Triple Helix? *Science and Public Policy* 26(2):138-39.

Etzkowitz, H and Chunyan Zhou. (2006) Triple Helix twins: innovation and sustainability. *Science and Public Policy* 33(1):77-83.

Gunasekara, C. (2006) The generative and developmental roles of universities in regional innovation systems. *Science and Public Policy* 33(2):137-50.

Leydesdorff, L and Etzkowitz, H. (2003) Can 'the Public' be considered as a fourth helix in university-industry-government relations? Report on the Fourth Triple Helix Conference 2002. *Science and Public Policy* 30(1):55-61.

Leydesdorff, L and Ward, J. (2005) Science shops: a kaleidoscope of science-society collaborations in Europe. *Public Understanding of Science* 14:353-72.

OECD (Organisation for Economic Co-operation and Development). (1999) *IMHE Report: the Response of Higher Education Institutions to Regional Needs*. Accessed 28 February 2008. www.oecd.org.

OECD (Organisation for Economic Co-operation and Development). (2007) *Review of South Africa's Innovation Policy*. Paris: OECD.

Sharif, N. (2006) Emergence and development of the National Innovation Systems concept. *Research Policy* 35:745-66.

Singh, M. (2001) *Reinserting the 'Public Good' into Higher Education Transformation.* Kagisano Higher Education Discussion Series No 1. Council for Higher Education (CHE): Pretoria.

South African Labour Bulletin. (2004) *Thirty Years on*. Special edition, commemoration of thirty years of the SALB publication. 28(6).

Stokes, D E. (1997) *Pasteur's Quadrant. Basic Science and Technological Innovation*. Washington: Brookings Institution Press.

The Talloires Network Newsletter. (2013) June Network Letter. Accessed 10 June 2013. http://talloiresnetwork.tufts.edu.

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GLOBALIZATION AND THE ACCELERATED TRANSFORMATION OF THE INDONESIAN ECONOMY

In recent years, globalisation has impacted business and society significantly and in varied ways, bringing opportunities and challenges to many countries. Moreover, a country's growth and sustainable development are more and more dependent on a strong, dynamic, and entrepreneurial innovation eco-system.

For a country to be successful in the global competition there is a need to leverage the full entrepreneurial and innovative potential of the people to transform the business sector and revitalise the public sector and, in turn, address economic, societal and environmental challenges in an effective way. Contemporary research and experiences have shown that the configuration of education providers plays an important role in making this happen.

This global transformation calls for an immediate response from universities to offer up-to-date and relevant curricula and interactive teaching and learning pedagogy. In these times of rapid change and disruption, entrepreneurial leaders and educators must work hand in hand to come up with sustainable solutions to manage the world's greatest challenges.

Indonesia has experienced rapid economic growth and development in the last few years, rising up the rank on WEF's 2011 global competitiveness scale. The country is blessed with abundant natural resources, a large, productive, and young population, and an indigenuous market with remaining growth potential, and has recently launched an ambitious master-plan and strategy for accelerating Indonesia's economic development for 2011-2025. This master-plan aims for Indonesia to become one of the ten leading economies in the world by 2025 and one of the six leading economies by 2050. To stretch and meet such targets, Indonesia has to pay attention to innovation to climb the value-chains, and develop human capital serving the more advanced needs to follow such a transformation.

INDONESIAN GROWING NEEDS FOR SCIENCE, INNOVATION AND ENTREPRENEURSHIP

Prime drivers highlighted in the master-plan are to have good quality higher education institutions with internationally acclaimed partners made available within the country to develop Indonesia's talent-base as well as a step-wise transformation of Indonesia into an innovation-driven economy. This is intended grow the pipeline of talent as well as the pipeline of indigenous innovations and intellectual property rights needed to help Indonesian based companies innovate and move up their respective value-chain.

Indonesia presently lags behind comparable countries when it comes to R&D investments, availability of R&D trainined and R&D active people, scientific international publications, and international patent applications.

Accelerated development of the applied research and innovation capacity and activity, in the spirit on making things better and more sustainable, is essentially needed to make the expressed transformation strategy of Indonesia feasible.

There is an urgent need to initiate and shape institutional change agents that together contribute to bring the Indonesian innovation system into the future where research and development institutions, with the role of producing technological innovations, actively engage in close collaboration with industrial and governance entities in bringing improvement in productivity and welfare.

The dynamics of international trade and investment while providing great resort for many entities to run their operation, often broaden significant imperils for a country like Indonesia to advance their own technological capacities. In spite of this, globalization displays an intensified occurrence of enhanced enactment of innovation systems. In such schemes, innovation systems are embedded in market processes, while the ensuing practices are driven to determine the payoffs to innovation (that generate the resources for innovation), and that ascertain further economic expansion and general welfare amelioration.

On August 1, 2012, i3L organized a meeting to present its planned operations and activities together with a group of highly experienced and senior decision-makers in the Indonesian Life-science ecosystem. The invited group expressed strong support for the positioning and the need for a new institute with a strong focus on leveraging the unique resources in the Indonesian context, and a strong focus on bringing existing indigenous and international biological and medical understanding into real applications addressing the most urgent needs and opportunities. The invited group highlighted the need to bring in the latest innovation models into application in i3L.

Breathing life into the Indonesian Life-science innovation system by adding Indonesian International Institute for Life-science

There will be a tremendous need from Indonesian-based employers and society for graduates who can understand the complexities of the emerging global life-sciences business landscape with deep knowledge to identify and capture valuable opportunities within different domain disciplines. In addition, there will be a need for university-driven applied research garnered from innovative and creative entrepreneurial student and faculty activities.
However, the Indonesian university landscape as it stands do not prepare their graduates sufficiently to meet the increasing international competition ahead, and i3L is intended to be one change agent to shape the emerging Life-science industries needed for Indonesia to realize the objectives stipulated in the Indonesia 2025 strategic plan.

There are currently few university alternatives within Indonesia which can provide students with both quality education and an international outlook and mindset, and this has led many of Indonesia's talented students to seek their university education abroad. Recent figures indicated that more than 70,000 students are going overseas for university studies every year - a number estimated to grow at more than ten percent per year.

Indonesia have not yet established any tradition or critical mass of research activity in the universities or in the companies, and also presently lacks access to sufficient research funding.

The most urgent challenges

This situation has created some important challenges for Indonesia:

- Indonesian employers and the Indonesian-based companies could not find enough high quality graduates with the right entrepreneurial mindset to run, manage, and lead their growth enterprises. This handicaps Indonesia's attractiveness as a place for companies to set up operations and delay the abilities of Indonesian-based companies from moving up the value chain.

- In turn, when talented graduates do not find great companies to work with in their home country, and they end up staying abroad after their graduation instead of returning to help build a nation of great companies.

- To stay competitive, Indonesian-based companies will need to innovate both in manufacturing and the service sectors, and the Indonesian ecosystem will need a pipeline of university-driven support in terms of applied research, leadership development, innovation centres or entrepreneurship accelerators.

- A large part of the Indonesian talent-base do not have the option to finance an overseas education that will match their talent to create new companies or build solutions. This is a waste of precious human capital which could be garnered for developing Indonesia's own Steve Jobs if they have a university program which unlocks their entrepreneurial potential and groom them to be entrepreneurial leaders.
- Tuition-fees and related travel and housing costs of more than 2 billion USD annually is invested by Indonesian families in sending talent to international universities rather than the Indonesian universities. Those investments could be better utilised for developing the education sector within the country.

The Indonesian International Institute for Life-sciences - i3L, to leverage unique assets of Inonesian Life-science eco system and accelerate innovation and entrepreneurship

i3L is being established as a high-quality innovation, research, and education Institute in Indonesia with the focus to fast establish as a recognized leader in building entrepreneurial and innovative activities accelerating the development of Indonesia Life-sciences industries. To accelerate its development towards a strong leadership position and strengthen its contribution to the development of Indonesian competitiveness, i3L is set up as a vehicle inviting both right spirited and high-quality indigenous as well as international activities that share the i3L vision and committment.

i3L will develop an entrepreneurial, pioneering and bold way of operating to enable it to quickly capture a position as the driver of entrepreneurship, innovation, and applicability in the Indonesian Life-science system, as well as a reputable educator of young graduates for meeting national, regional, and international needs, and a valued partner to our business community and society. This will be accomplished by inviting and providing full-service to a portfolio of complementary indigenous and international universities and schools that together can create the international campus spirit. i3L will also support the management in each of the schools to ensure that everything delivered at the campus will be distinctive high-quality education, and collaborative research, providing an international outlook in prioritized areas to support the continued development of the Indonesian economy. i3L will adopt multiple innovation and entrepreneurship drivers to build an entrepreneurial mindset and international outlook across its engaged faculty, students, and working professionals, combined with an interactive learning and teaching pedagogy deployed across all of its educational programs and initiatives across its different research and innovation programs.

i3L is poised to offer an innovation and educational platform of the highest international standards, attracting talented students, faculty, and other academic partners on a broad basis, with a view to mastering the opportunities of technical progress, global economic transformation, ensure environmental stewardship and growing creative and entrepreneurial managers and leaders. The i3L study programs will be complemented with, and operate in tandem with strong applied research efforts via the International Business, Trade, and Innovation Centre, as well as the i3L Venture Accelerator and the i3L Venture Lab facilities that aim to enhance its developmental impact.

i3L is intending to become an important vehicle in creating and accelerating opportunities for international trade and business development by actively engaging the business community in Indonesia. Strong partnerships will be forged and developed with organisations such as the National Economic Committee and National Innovation Committee, Economic Development Council, Kadin Business Community, Chambers of Commerce, Ministry for

Economic Affairs, and Ministry for Education, as well as Ministry of Youth and Community in Indonesia, to ensure effective linkages between the national, the regional, and the international contexts and a successful contribution to realizing the Masterplan for Indonesia 2011-2025.

i3L will be built on the following cornerstones:

- Leveraging the unique assets in Indonesia in terms of existing Life-science activities and opportunities and bring these into application through a strong innovation and entrepreneurship framework.
- Leveraging on the eight main programs, twenty-two main economic activities, and the identified six economic corridors mentioned in the Indonesian masterplan, i3L will focus on becoming a prime driver in the development of the human resource and applied research capacity in the strategic areas of biomedicine, biotechnology, bioinformatics, nutrition and food technology, needed to support the needs of the country's strategic plan.
- Leveraging on the strategic partnership with the global leaders in respective fields.
- Leveraging a strategic partnership with the leading Indonesian corporate groups.
- Leveraging close collaboration with Indonesian public sector organizations to actively engage in the present transformation of the welfare delivery system to ensure inclusive growth in the country
- Leveraging the growth and transformation in the Indonesian economy, and provide the country with a pipeline of well-prepared and caring graduates as well as a portfolio of new applied research initiatives contributing to making the Indonesia 2025 vision a reality.
- Leveraging graduates strongly connected with local knowledge but provided with a truly international mindset to help Indonesian companies grow global.
- Leveraging the untapped potential in accelerating growth and internationalization among indigenous companies by having students work as interns in those companies.
- Effectively contribute to the development of the entrepreneurship and innovation ecosystem in Indonesia by developing graduates with the right entrepreneurial skills, connectivity, and mindsets, and actively engage with the i3L Venture Accelerator and the I3L Venture Lab activities set up across all programs in the university.
- Educational activities and research performed in close collaboration with business sector and relevant public organizations, to accelerate both business and technology development, enabling partnering companies to raise competitiveness and enable governmental organizations to introduce entrepreneurial perspectives in public services, and introduce new technical and business applications to meet with societal needs across relevant sectors, such as health, education, lifestyle and retail business, trading and shipping, as well as tourism.
- A sharp focus on entrepreneurship and growth by fostering entrepreneurial leaders through effective mentorship and throughout the different academic disciplines and study programmes, linked to new methods for skills upgrading, training, and international business development activities. We will be offering a slew of executive and professional education programs to make this happen.
- A simultaneous global and local portfolio of activities, internships and skills will be promoted through strong partnerships with the Kadin Business Community, Chambers of Commerce, and Indonesian Government, as well as multiple strong links to the international entrepreneurship eco-system and leading entrepreneurship-oriented universities and other higher education institutions which are global partners of Babson.
- Connecting to the global entrepreneurial leaders driving the development of entrepreneurial mindsets and international outlook within universities.
- A truly international mix of faculty with i3L aiming for large numbers of permanent visiting international faculty to interact with Indonesian faculty with significant international experience.
- A study abroad program where students will be expected to study two semesters at any one of i3L's partner universities in US, Europe, and Asia.
- Double degree opportunties developed together with I3L's strategic international university partners.
- Aim for building a faculty that meets the international standards with at least fifty percent of the faculty members having a PhD degree. i3L wants to launch an internationally connected portfolio of PhD programs which will help develop our own junior faculty, as well as graduates from our future master programs. We are also willing to offer ambitious faculty from other Indonesian universities the unique opportunity to combine an active junior faculty role with us whilst pursuing international PhD programs in Medicine, Biotechnology, and Foodtechnology, with strong international supervisors.

"i3Ls Vision is to be the recognized leader in transforming Indonesian Life-science assets and opportunities into real innovations and economic development"

The vision for i3L is to provide both working professionals, undergraduate, and graduate students, as well as faculty and staff, with a unique environment for Life-science education, research, and innovation of good international standards.

"i3Ls Mission is to Accelerating Competitiveness of Indonesian Life-Science Industries through providing Quality Graduates, Quality Applied Research, Quality Innovation and Entrepreneurship frameworks and an International Outlook"

The mission for i3L is both to become a prime engine for sustainable growth and competitiveness in Indonesia through building up entrepreneurial leaders with innovative ideas, and contribute to generating applied research and work closely with the Medical, Biotechnology, and Foodtechnology industries in Indonesia to move up the value chain.

i3L will focus on giving students an entrepreneurial mindset and global outlook via our multi-disciplinary study programs, and a mix of in-classroom and internship activities such as the i3L venture laboratory and the i3L venture accelerator, to nurture students needed by industry and government to bring Indonesia to the next level of sustainable development.
In addition, i3L's graduates will imbibe and manifest a set of core values which make them conscious of the need to manage people,

profits, and planetary issues simultaneously and not sequentially. They will be responsible leaders with high principles and values, embedded in deep technical as well as domain knowledge, to make a difference for Indonesia and society at large.

i3L students will learn to become cognitively ambidextrous. On the one hand they will be ready to experiment with new ideas and act in new environments; on the other they can apply deep functional knowledge and detailed analysis to plan future actions. Students can learn to act creatively within unknowable portions of the world, while learning more traditional competencies for situations where information is difficult to come by or unavailable. Our future leaders must be able to discern the known from the unknown, understand the approach that works in each scenario, and learn to adapt their actions and analysis accordingly.

i3L's educational philosophy is designed to infuse social and environmental responsibility into the curriculum. It is designed to prepare students to lead in a complex and ever changing world.

Bringing international strategic partners will give direct access to state-of-the-art technical skills but also state-of-the-art entrepreneurship and innovation driven education, access to world-class faculty, access to continuous faculty development for i3L's own faculty, and a global network of like-minded universities providing both students, faculty, public and corporate partners with unique access to the global entrepreneurship eco-system.

i3L will in summary provide the following principal stakeholder value:

- Assets and opportunities in the Indonesian Life-science eco system will get access to a vehicle transforming these into innovations and economic growth through new and entrepreneurial frameworks.
- Ambitious university development projects sharing the vision will get help to accelerate the start-up, full-service support, be part of a critical mass of like-minded and complementary initiatives, and get access to a state-of-the-art truly international campus also providing boarding opportunities.
- Students and working professionals engaged in all study programs and disciplines will get a unique and exciting learning journey, being part of an international, multi-disciplinary and entrepreneurial learning ecosystem, and being coached and taught by a truly diverse group of faculty with extensive experience from both industry and academia. There will be innovation and entrepreneurship activities incorporated within every of i3L's various disciplines as well as state-of-the-art teaching of these subjects. Students will be given the chance to be part of projects and activities directly contributing to the development of the Indonesian economy and the transformation of the welfare delivery in the community and country. Talented students without financial means will have the chance to compete for generous scholarships making the international high -quality educational experience both accessible and inclusive.
- The Indonesian medical, biotechnology, and foodtechnology sectors will get unique access to graduates with a truly entrepreneurial mindset and international outlook, gain the opportunity to engage in i3L applied research projects, venture laboratories and venture accelerator with projects and coaching, have access to international executive education ranging from "managing high growth companies" to "family-owned businesses", and will be invited to take part in pioneering collaborative research activities together with international thought-leaders in entrepreneurship and innovation.
- The public organizations in Indonesia will get unique access to graduates with a truly entrepreneurial mindset and international outlook, to help innovate and transform the public organizations to provide the welfare to its people as needed to realize the Indonesian 2025 vision. All our students are required to do internships and community service with our various industry partners and NGOs and VWOs.
- Faculty will get a unique and exciting set of development opportunities by being part of the team shaping the next generation international university. They will be coached to deliver teaching excellence through specially developed faculty training programs, get access to a unique international PhD program accelerating their own development and careers, develop new pedagogic approaches in the i3L venture laboratory and i3L venture accelerator, and be part of pioneering collaborative research activities together with regional and international businesses and public organizations. Faculty will be encouraged to be part of projects and activities directly contributing to the development of the Indonesian economy and the transformation of the welfare delivery in the country.
- The Indonesian university landscape and the Ministry for Education will get an additional driver via i3L for (i) internationalization, innovation and entrepreneurship activities, as well as (ii) a university meeting international standards creating opportunities for students, faculty, and staff to learn from a wide selection of courses for students in all disciplines, and (iii) faculty development where the graduates of i3Ls in both MSc and PhD programs will become important contributors to the faculties of other ambitious Indonesian universities.
- The Indonesian economy will benefit both from the graduates and the research projects that will be pursued at i3L, but i3L will contribute in real-time by accelerating innovation, entrepreneurship, through international business activities and developing mindsets among key actors through different ventures in our collaborative projects with government, businesses and community.

TRIPLE HELIX ASSOCIATION NEWS

NEW THA CHAPTERS

The THA Membership and Strategy Committee is pleased to announce the establishment of two new THA Chapters, one in Brazil (July 2013), under the coordination of ANPROTEC, the Brazilian National Association of Innovating Enterprises, and the other in Greece (August 2013), under the coordination of the South East European Research Centre (SEERC) based in Thessaloniki, Greece. This brings the number of THA Chapters to three, after the September 2012 set-up of the Russia Chapter, coordinated by TUSUR University in Tomsk, and marks a new stage in the global expansion of the THA.

The THA Chapters aim to promote THA ideas and activities at national and regional levels, by stimulating the interaction between the Triple Helix actors, performing and disseminating studies, reports and analyses related to Triple Helix interactions, organizing Triple Helix conferences, and other meetings of relevant scientific interest. The THA Chapters also promote international exchanges of THA scholars and educational activities for students, scholars, and practitioners in areas of interest for the THA. The Chapters can prepare and perform joint research projects, funded by regional, national, or international sponsor agencies, and ensure a wide communication and visibility of their activities to the local, national and international community.

Further details about the activities of the THA Chapters, and the procedure to establish a THA Chapter, are available on the THA website

www.triplehelix association.org.

If you are interested in creating a THA Chapter in your country, please contact Dr Marina Ranga, Chair of the THA Membership and Strategy Committee at

marina.ranga@ stanford.edu.

BRAZIL CHAPTER

Established: July 2013

The Brazilian Association of Science Parks and Business Incubators – ANPROTEC

ANPROTEC is comprised of private and public members with professionals that actively promote innovative enterprises and technology-based business, by means of innovation habitats and value-added services.

Over twenty-five years, Anprotec has disseminated state-of-the-art knowledge on innovative entrepreneurship promotion, creation and nurturing of new ventures, planning and management of innovation ecosystems, and related subjects. The outcomes for the members include publications (magazine, academic journal, books, teaching material, e-news), capacity building (from basic courses to MBA), content and networking venues (annual seminar and workshop, international conferences, regional and thematic meetings, technical missions), good practices models (toolkits, national award, reference centres, consultancy), and assessment systems.

We have expanded constantly for more than two decades of continuous operation, both in number of members and scope of activities, becoming an institutional reference for entrepreneurship and innovation in Brazil. Nowadays, Anprotec is the hub of a vibrant globally connected movement, with regional and state networks throughout the country. It comprises of 400 incubators and thirty science and technology parks in operation, involving 6,500 innovative firms. Eighty per cent of the top Brazilian universities have at least one incubator, and many are involved in the establishment of science and technology parks, helping to overcome the so-called academy-industry gap.

Our plans for Triple Helix Brazil Chapter for the next two years are attracting new members; the organization of meetings; stimulating the interaction between universities, enterprises, and government, and disseminating studies and reports through an association magazine and via various means of communication. To certify a wide communication and visibility of Chapter Brazil, a banner will be created on our website immediately. To explore financial resources and the organization of a conference, we will work on the submission of a project. A team of support and consultants will be established to work during the start-up phase of the institutional Chapter to develop strategies and plans to ensure the outgoing of activities.

We are certain that the development of these activities will contribute decisively to the recognition and consolidation of Triple Helix Chapter Brazil, spreading across the country the principles defended by the organizations, which are shared by Anprotec and its associates. Our expectation, therefore, is that this process is a breakthrough in the history of both the THA and Anprotec, adding even more achievements as successful trajectories built by both institutions.

TRIPLE HELIX ASSOCIATION NEWS

GREECE CHAPTER

Established: September 2013

The South East European Research Centre (SEERC), Thessaloniki

Triple Helix interactions are perceived as key to the fast paced development of the knowledge based society. Building such interactions with proper protocols and missions can lead to innovation progress, entrepreneurial capacities, and enhanced knowledge and technology transfer with the ultimate goal of a successful engagement in regional development. Such interactions involve several shifts especially in higher education, which has to assume an entrepreneurial role and to incorporate in its mission knowledge commercialization strategies by involving industry and government. These shifts can be successfully observed in developed countries, where the regions nearby universities burst with entrepreneurial ventures, innovation capacity, and overall improved regional economy. This is not the case in South East Europe and especially in Greece. The harsh economic environment, low communication among Triple Helix actors, the rigid structures of academic institutions, obsolete regulatory framework, lack of business-oriented culture, limited support for entrepreneurial activities, low innovation score, and severe brain drain, point towards the fact that Triple Helix interactions are not being performed in this area.

In this context, the establishment of the Triple Helix Association (THA) Chapter in Greece aims to boost Triple Helix interactions in Greece and in the South East European region, and potentially assist the region by enabling proper long term sustainable regional development.

The South East European Research Centre (SEERC) from Thessaloniki, Greece, has taken the initiative to establish a THA Chapter in Greece together with the following consortium: the Centre for Research and Technology Greece (CERTH), Aristotle University, Urban and Regional Innovation Research (URENIO), Association of Information Technology companies of Northern Greece (SEPVE), Greek International Business Association (SEVE), Help-Forward Network, EMETRIS Consulting, Regional Authority of Central Macedonia, Thessaloniki Chamber of Commerce, Greek Computer Society (EPY), and The University of Sheffield International Faculty, CITY College.

The SEERC is an overseas research centre of the University of Sheffield, England, UK, established as a non-profit legal entity in Thessaloniki. The Centre was founded in 2003 by the University of Sheffield International Faculty, CITY College - a faculty which experienced a successful process of internationalisation of higher education. The belief that South East European (SEE) countries form an area of exceptionally high calibre research potential underpins the initiative for the establishment of SEERC.

SEERC's mission is to support the stable and peaceful development of South East Europe by conducting pure and applied research in and for the region. The SEE region is characterised by varying levels of development between countries, and a low level of cross-country business networking, largely due to the region's fragmentation. SEERC employs the research capacities of the University of Sheffield and its International Faculty CITY College, by facilitating collaborations between their research staff and by developing multi-disciplinary networks of researchers from across South-East Europe. The Centre was established as a means of building capacity for the benefit of the region. Research at SEERC addresses economic, technological, political, social, and cultural challenges facing an enlarged and enlarging Europe, and is organised around three broad areas of concern: Enterprise, Innovation and Development; Information and Communication Technologies; and Society and Human Development.

SEERC, in cooperation with the previously mentioned consortium. have achieved stakeholder engagement in developing research agendas based on actual needs and aspirations. It constructs research questions in a way that facilitates evidence-based policy discussion at the local/regional level, becoming a local/regional "think-tank" that promotes initiatives, tools and policies at the strategic and operational level for local stakeholders. SEERC ensures that infusion of knowledge external to the region is "facilitated/translated" by local academic staff with knowledge of local needs and specificities. SEERC is an organizer of numerous networking events and is actively engaged in regional development. The Chapter can provide an official mechanism for continuing such activities which are vital for the SEE Region.

The content-specific aims of the THA Chapter in Greece are tailored around the recommendations of the THA. Overall, the main aim of the Chapter is to create an effective dialog among national/multi-national entities in order to bolster the innovation and entrepreneurship capacity and engage in the regional development of Greece and the South East European region.

The Chapter intends to promote analyses and studies on the interaction between universities, firms, and government, aimed at translating academic models into practical achievements. It will support international exchange of scholars and educate scholars in the field of THA's mission. It will organize international symposia of relevant scientific interest, provide a common discussion framework for Triple Helix actors in order to engage in regional development of Greece and of the South East European Region, boost the innovation capacity, encourage and support entrepreneurship and fight the regional brain drain.

The Chapter in Greece aims to expand to the wider SEE Region in order to create a solid development block with coordinated knowledge resources and activities that will help the region progress.

TRIPLE HELIX: A JOURNAL OF UNIVERSITY-INDUSTRY-GOVERNMENT INNOVATION AND ENTREPRENEURSHIP (THJ) PUBLISHED BY *SPRINGER OPEN* IN 2014

CALLS FOR PAPERS

Inaugural Issue - *"Innovation's Future"*

The 'Triple Helix' concept was implicit in a movement to address the 1930's depression (Etzkowitz, 2012). The great depression of the 1930's created underutilized physical resources in contrast to the contemporary underutilization of intellectual resources. Innovation appears to be stalled in the wake of the 2008 economic downturn. A spectre of obsolescence haunts the innovation system of societies irrespective of national differences, developmental stage, or previous success. Hastened by globalization challenges, and increased competition, an industrial mode of production has run out of steam in many countries and brought the processes of transition to a knowledge-based society to the forefront of attention, in different guises.

'Open innovation' pervades the US although only a very small proportion of R&D is conducted collaboratively despite the elimination of Anti -Trust restrictions. 'Smart specialization' takes hold in Europe, requiring concentration of resources and focused choices among R&D fields in regional development projects. 'Indigenous innovation' supersedes reliance on foreign technology transfer as China moves from a 'catch up' to 'take the lead' strategy. *It is held that, '… models shape how innovation is understood, and as a consequence, what policies are formulated and implemented.'* (Godin and Lane, 2013). This issue focuses on the following questions:

- What is the way forward in an era of financial stringency?
- What is the future line of development of the National Innovation System concept and its offshoots, the Triple Helix and its variants?
- Is there a changed relationship between human needs and technological opportunities in a knowledge-based society?

We would like to invite you to address these questions or pose your own. An ideal article combines theoretical, empirical, and policy elements, although the balance may differ. Please send proposals to: journal@triplehelixassociation.org.

References

Etzkowitz H. (2012) An Innovation Strategy to End the Second Great Depression. *European Planning Studies* 20(9).
Godin B and Lane J, (2013) Pushes and Pulls: the Hi(S)tory of the Demand Pull Model of Innovation. *Science, Technology and Human Values* 35(5): 621-654.

Special Issue - *"The Spatial Dimension of Innovation: Triple Helix and the City"*

Horizon 2020, the next European Framework programme will target technology, regional and urban innovation, and reopen the discussion on the old nexus of innovation and space when addressing the smart city as an integrative concept for interdisciplinary knowledge creation and capacity building.

The world is experimenting with innovation models. China is changing development zones to clusters in order to upgrade the economy, Germany reopens a new discussion on governance in innovation, and Africa might benefit from these new approaches to innovation and contribute to the debate in a new way. A pattern connecting these innovation models will have to link technological and social innovation as well as different types of spatial transformations (e.g. urban and regional). Innovation policy faces organizational challenges when embracing the idea of space.

New forms of interaction and governance between innovative industries, intergovernmental policies, and universities and other knowledge producing institutions, have an impact on the social and physical transformation of cities and metropolitan areas. Synthesizing insights from megacity research, sustainability science, and innovation and cluster policy, the spatial dimension of technological and social innovation will be the focus of this special issue.

We will welcome papers on "Triple Helix and the City" focussing on:

- Innovative approaches for managing urban and regional transformation such as smart growth strategies; "syntegration"; cross-sectoral, transdisciplinary urban transition management.
- Interdisciplinary case studies and best practices in social urban innovation, new innovation models ("post-Baconian"?), and their institutional implications.
- The specific role of global and local finance (for infrastructures, urban and rural transformation, systemic risks …).

The special issue will integrate the current discussion on social and/or technological innovation into the Triple Helix debate.

Contact:

Dr Christiane Gebhardt, Triple Helix Association / associated to the University of Heidelberg, Germany, Christiane.Gebhardt@t-online.de
Professor Dr Harald A Mieg, Metropolitan Studies Group, Institute of Geography - Humboldt University, Berlin, Germany, harald.mieg@hu-berlin.de

International Journal of Transitions and Innovation Systems

Call for Papers: Special Issue on

"*Triple Helix Innovation in the EU New Member States and Candidate Countries: Catching Up, Muddling Through, Forging Ahead?*"

The Special Issue aims to examine recent innovation developments in the new EU Member States and candidate countries from a Triple Helix perspective, in the context of transformations induced by the EU integration. The main objective is to assess the impact of EU integration on the reform and modernisation of national RDI policies, programmes, actors, infrastructures, institutional framework, strengthening of science-industry links and research commercialisation, internationalisation, etc - and reflect on the role that Triple Helix partnerships played or could play on all that. The impact of the economic crisis on the three major Triple Helix actors: university, industry and government, and the overall effect at the national and regional level will be also examined.

Please visit the Call for Papers for all details about suggested topics, deadlines, and instructions for authors on the Inderscience website: www.inderscience.com/info/ingeneral/cfp.php?id=2312.

Guest Editor: Dr Marina Ranga, Triple Helix Research Group, Stanford University, USA (http://triplehelix.stanford.edu/triplehelix)

Penn Center for Italian Studies

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On the occasion of the publication of Riccardo Viale's new book

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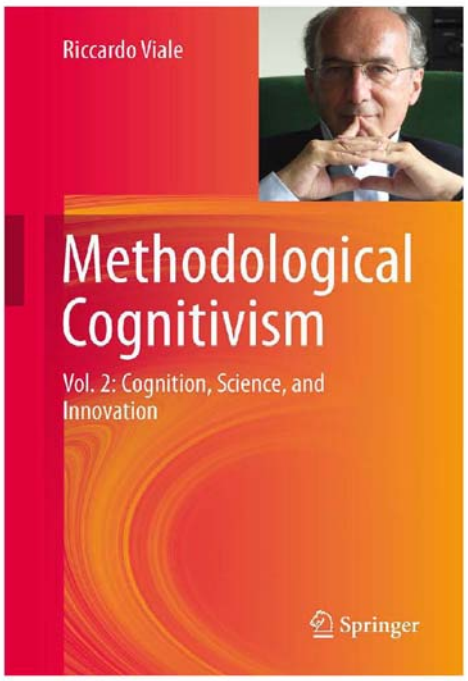

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An International Seminar

with

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Director, Italian Cultural Institute, NY

Massimo Piattelli Palmarini
MIT - University of Arizona

Nancy Nersessian
Georgia Institute of Technology

Barbara Tversky
Columbia University

Lorenzo Magnani
Università degli Studi di Pavia

Introductory remarks by
Fabio Finotti
University of Pennsylvania

3 October 2013, 5pm

Suite 400A
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For more information on the book please contact:
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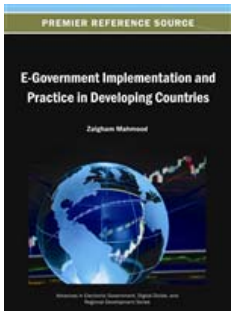

E-Government Implementation and Practice in Developing Countries

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- **Social Media in State Governments: Preliminary Results About the Use of Facebook and Twitter in Mexico**
  Rodrigo Sandoval-Almazan, J. Ramon Gil-Garcia.
- **ICT for Social Inclusion and Equal Opportunities: CETI-D, An E-Governance Good Practice in Brazil**
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- **A Case Study of Citizen-to-Government Mobile Activism in Jamaica: Protesting Violations of the Rule of Law with Smart Phones**
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- **E-Democracy and Trust: Social Networking and E-Government Services in Iran** - Fatemeh Ahmadi Zeleti
- **Explaining the Underdevelopment of Rural E-Government: The Case of Romania**
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Industry and Higher Education

SPECIAL ISSUE:
Innovation policy as a concept for developing economies: re-newed perspectives on the Tri-ple Helix system

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Guest Editors: Dessy Irawati, Newcastle University Business School, Newcastle Upon Tyne, UK, and Christiane Gebhardt, Malik Management Institute, St Gallen, Switzerland.

1. **Introduction**
   Irawati, Dessy; Gebhardt, Christiane
2. **Triple Helix systems: an analytical framework for innovation policy and practice in the Knowledge Society**
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3. **Governance of innovation and intermediation in Triple Helix interactions**
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4. **A new approach for analysing national innovation systems in emerging and developing countries**
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THA MEMBERS LATEST PUBLICATIONS

Etzkowitz, H. Mistaking dawn for dusk: quantophrenia and the cult of numerology in technology transfer analysis. *Scientometrics (2013)*, DOI 10.1007/s11192-013-1007-7.

Etzkowitz, H. (2013) Anatomy of the entrepreneurial university. *Social Science Information* 52 (3) 486-511.

This article analyzes the evolution of the entrepreneurial university from a narrow focus on capturing the commercializable results of the 'meandering stream of basic research' to a broader interest in firm formation and regional economic development. No longer limited to schools like MIT, specialized for that purpose, entrepreneurial aspirations have spread to the academic mainstream. Academic involvement in (1) technology transfer, (2) firm formation and (3) regional development signifies the transition from a research to an entrepreneurial university as the academic ideal. As universities become entrepreneurial, tension arises between this new role and that of teaching and research as it has between research and teaching. Nevertheless, the university coheres as each of these new missions has fed back into and enhanced previous tasks.

Etzkowitz, H and Dzisah J. (2013) Bottom-up Triple Helix: science policy in the states of the USA. *Journal of Knowledge-based Innovation in China* 5 (2) 80-96.

Purpose: The paper aims to investigate the emergence of science policy in the states of the USA, drawing attention to the fact that every state has a science and technology agency and multiple programs that attempt to raise the level of science and technology in the state and attract resources from elsewhere.

Design/methodology/approach: The paper builds upon the authors' previous study of high-tech growth and renewal in Boston and Silicon Valley through analysis of documents and interviews with key actors in universities, S&T policy units of the Governor's association to detail the bottom-up initiatives exemplifying the US innovation policy model.

Findings: The path dependent elements in US science and technology policy are an enhanced role for universities, an ambivalent role for national government and industry and a growing role for state and local government. Federal research funds, largely confined to support of agricultural research before the Second World War, became available for a variety of civilian and military purposes, on an on-going basis, after the war. An assisted linear model of coordinated innovation mechanisms has been constructed on this base to translate inventions into economic activity through university-industry-government interactions.

Originality/value: The paper shows that S&T policy at the state level fills gaps in university-industry relations, leverages federal R&D spending and enhances local comparative and competitive advantage.

ИНСИТУЦИОНАЛЬЬНОЕ МОДЕЛИРОВАНИЕ ИННОВАЦИОННОГО РАЗВИТИЯ: ОТ ТРОЙНОЙ К N-СПИРАЛЯМ, translated by Marina Leonova; Conference "Marketing and Society," Kazan, 2013, 97-99.

Goel, R K and Göktepe-Hultén, D. Industrial interactions and academic patenting: evidence from German scientists. *Economics and Innovation and New Technology (2013)*, DOI: 10.1080/10438599.2013.776861

Using a unique survey of scientists at a large public research organization, this paper examines the effects of industry interactions on academic patenting. Two types of collaborations, industrial cooperation and consulting, are considered. Results show that both cooperation and consultancy increase the likelihood of patenting. However, only the positive influence of industrial cooperation stands up to robustness checks. Effects of personal, professional and institutional factors are in line with the literature, yet with some differences across cooperation and consultancy. Implications for research policy concerning academic patenting and challenges that industry may experience are discussed.

Goel, R K and Göktepe-Hultén, D. Nascent entrepreneurship and inventive activity: a somewhat new perspective. *J Technol Transf* (2013) 38:471–485, DOI 10.1007/s10961-012-9280-9.

This paper focuses on the nexus between nascent entrepreneurship (NE) and inventive activity. It questions how NE affects inventive activity (including innovation and patenting) while analyzing the views and predictions that have used patenting as an indicator of entrepreneurial behavior. Using data on German researchers and controlling for their personal, professional and institutional attributes, the findings show that NE increases both patenting and innovation. Implications for technology policy are discussed.

Ivanova, I and Leydesdorff, L. (2013) Redundancy generation in University-Industry-Government relations: The Triple Helix modeled, measured, and simulated. Currently under submission. http://arxiv.org/abs/1308.3836

A Triple Helix (TH) of bi- and trilateral relations among universities, industries, and governments can be considered as an ecosystem in which uncertainty can be reduced auto-catalytically. The correlations among the distributions of relations span a vector space in which two vectors (P and Q) represent "sending" and "receiving," respectively. These vectors can also be understood in terms of the generation versus reduction of uncertainty in the communication field that results from interactions among the three (bi-lateral) communication channels. We specify a set of Lotka-Volterra equations between the vectors that can be solved. Redundancy generation can then be simulated and the results can be decomposed in terms of the TH components. Among other things, we show that the strength and frequency of the relations are independent parameters. Different components in terms of frequencies in triple-helix systems can also be distinguished and interpreted using Fourier analysis of the empirical time-series. The case of co-authorship relations in Japan is analyzed as an empirical example; but "triple contingencies" in an ecosystem of relations can also be considered more generally as a model for redundancy generation by providing meaning to the (Shannon-type) information in inter-human communications.

TRIPLE HELIX ANNOUNCEMENTS

TRIPLE HELIX ASSOCIATION ELECTION PROCEDURE

The THA President Motion on Election Procedure as approved by the THA Executive Committee

The THA Election Procedure (for those positions not filled by the Founding Members Election Procedure*) to include:, following close of Voting Roll on Monday 30 September 2013 and certification of members by Secretary General:

15 day Nomination Period
President's slate to be offered and individual nominations and self-nominations welcome (1-15 October 2013).

15 day Election Period
Candidates statements to be invited for placement on members section of THA website, and to be distributed by the Secretary General in a file sent to the membership and/or members only special edition of Hélice (15-30 October 2013).

15 day Voting Period
Over the Internet as called for by the THA statutes (1-15 November 2013).

Certification of results by THA Attorney (16-21 November 2013)

Results to be announced by Secretary General on Friday 22 November 2013

IMPLEMENTATION

Within 1 December 2013, the Triple Helix Association Board Members must be renewed, and the General Assembly will be called to vote for the :

- President
- Two Vice-Presidents
- Two Audit Members
- Three Members of the Executive Committee.

Only members who have paid association fee are members of the General Assembly and can vote. Each member has one vote. Organization members count for one vote.

The elections procedure will follow the above approved motion and will therefore be as follows:

1. Founding Members of the Triple Helix Association (Riccardo Viale, Anna Mereu, Henry Etzkowitz, Loet Leydesdorff, Josè Mello, Girma Zawdie, Wong Poh Kam) will select three members to join the Executive Committee. The selection will be through a consultation among the founding members, and the results will be made public to the Secretary General. The Secretary General will arrange a Skype or other virtual media communication among the founding members group to facilitate communication. There will not be public consultation, or general voting on those three members.

2. Between 1 October and 15 October 2013: **15 day Nomination Period** - the President's slate to be offered, and individual nominations and self-nominations are welcome for President, two Vice-Presidents, three members of the Executive Committee, and two auditing positions. Nominations and self-nominations must be sent to the Secretary General, together with a statement of qualification that will be placed on the THA website. Only members of the THA who have paid the association fee at the date of 30 September 2013 will be accepted to be included as candidates.

3. Between 15 October and 30 October 2013: **15 day Election Period** - statements of candidates accepted will be made public on the THA website, and through the Hélice Newsletter, to be available for members during the voting period.

4. Between 1 November and 15 November 2013: **15 day Voting Period** - for members of the General Assembly to express their vote, by email, to Secretary General. Only members who have paid their association fee at the date of 30 September 2013 will be eligible to vote.

5. Between 18 November and 22 November 2013: **Certification of Results** - the results of the voting will be certified by the THA Attorney.

6. **Election Results to be announced** by the Secretary General between 22 November and 29 November 2013.

7. The President elected during this vote will take up office on 1 December 2015.

8. The two Vice-Presidents, the Executive Committee, and the Auditors will take up office at the date of election.

* positions filled by Founding Members vote are as per Statute,

Fourth International Research-Centred Summer School, Athens, Greece

The second edition of the "Information and Communication Technology for Development International School (ICT4DEVIS)" of FONDAZIONE ROSSELLI AMERICAS (FRAmericas) was held at the FOURTH INTERNATIONAL RESEARCH-CENTERED SUMMER SCHOOL, ATHENS, GREECE

FONDAZIONE ROSSELLI AMERICAS (FRAmericas), Washington DC, USA, cooperated with the FOURTH INTERNATIONAL RESEARCH-CENTERED SUMMER SCHOOL, ATHENS, GREECE, IN ORGANIZING THE ICT4DEVIS (Information and Communication Technology for Development International School) SECOND EDITION IN JULY 2013.

THE FOCUS OF HIS SECOND EDITION WAS to provide a better understanding on the use of ICT in project planning for sustainable development, specifically focusing on developing countries leapfrogging to a Knowledge Economy (KE).

FRAmericas' ICT4DEVIS is conceived as a for-credit, hands-on, practice oriented, cross-cultural summer school, intended for students, professionals and practitioners who want to pursue a professional career in deploying ICT as a means for international development.

FRAmericas is the natural evolution of Fondazione Rosselli Americas (FRA) the Americas branch of Fondazione Rosselli (FR), a non-for-profit Italian Foundation devoted to research and promotion of the study of public policy as it relates to major societal and economic issues, in order to generate answers to the complex questions faced today by governments and citizens alike through the application of behavioral and cognitive science.

FRAmericas' mandate is to generate, promote and execute projects in favor of the creation of knowledge societies, in the realm of international development.

Fondazione Rosselli is also the Headquarters of the Triple Helix Association, established in 2009 at its premises.

The 2013 Summer School on Cognitive Systems and Interactive Robotics, Social Media, Digital Preservation was organized by the Interactive Robots and Media Lab (www.irmllab.com), the Software and Knowledge Engineering Lab at National Center for Scientific Research "Demokritos", Greece (www.demokritos.gr), and the European Union FP7 ICT research projects: ARCOMEM (www.arcomem.eu) and SOSENSOR (www.socialsensor.eu). The Summer School took place between July 4 and July 31 2013 in Athens, Greece.

The topic and research project areas ranged across: Human Robot Interaction and Whole-body HCI, Dialogue Systems and Computer Vision, Information Visualisation, Social Media Analysis and Utilization, Digital preservation and the Social Web, User Modelling and Recommendation systems, Affective science and computing, and ICT for sustainable development and knowledge economy.

The Social Media and Digital Preservation theme was co-organised by the EU-funded Integrated Project ARCOMEM. A distinguished group of lecturers and experts from the Media sector and Parliamentary Libraries were present for the duration of the School to present the latest scientific findings in the area. There was also a hands-on training session for

students on the applications and technologies of Digital Preservation and the Social Web.

The SOCIALSENSOR project supports the organization of the Summer School and provided the dimension of real-time multimedia indexing and search in the Social Web. Engineers and researchers from the consortium of the project explained how to move beyond conventional text-based indexing and retrieval models by mining and aggregating user inputs and content over multiple social networking sites.

New tools for Social Indexing were presented which incorporated information on the structure and activity of the users' social network directly into the multimedia analysis and search process.

TRIPLE HELIX 2014: DATE FOR YOUR DIARY

Triple Helix International Conference
September 11-12, 2014
TUSUR University, Tomsk, Russia

Topic: The Triple Helix and innovation-based economic growth: New Frontiers and Solutions

Important deadlines:

Submission of abstracts and summaries	March 1, 2014
Confirmation of acceptance	March 31, 2014
Full paper submission	Closes June 20, 2014

Further information: http://tha2014.org/

ANNUAL MEETING OF THE SOCIETY FOR SOCIAL STUDIES OF SCIENCE (4S)

Citizens' Science Policy: Stem Cell Challenge and Response
Innovation through the California Institute of Regenerative Medicine (CIRM)

Friday October 11, 2013, 2.00-3.30 pm

In this session we invite you to discuss how citizen driven science policy can come about, and the role of scientists, universities, firms, venture capitalists and patients. Our case is that of California Institute of Regenerative Medicine (CIRM), representing an integrated approach to go from the lab-bench to the bed-side, and from chronic care to prevention. CIRM came about through challenge and response to a crisis: the blockage of stem cell research funding on ethical and religious grounds. This led stem cell advocates to fall back on the state level. In 2004 Californians voted in favor of Proposition 71, an initiative that amended the state constitution to provide 3 billion USD in funding for stem cell and regenerative medicine research, intended to break through the federal research blockage. Over the past several years, facilities have been constructed often with matching philanthropic funds, large scale PhD training programs have been put into place involving up to twenty students instead of the smaller groups usually organized through NIH funding. Also, basic and translational research programs have been established by peer review that include an appeal stage in which a citizen board can override peer review decisions, and clinical trials have been set in motion. Our question for this session is how this counter-cyclical funding model came about, and how it can signify a new approach for citizen driven science policy.

- ***Californian Innovation in Regenerative Medicine***
  Professor Annika Rickne, Innovation and Entrepreneurship, University of Gothenburg
- ***Counter Cyclical Innovation Funding and the New Public Understanding of Science***
  Professor Henry Etzkowitz, Triple Helix Association
- ***Round Table Discussion on Regenerative Medicine in California, with stem cell scientists:***
  Professor **Karen Aboody,** City of Hope National Medical Center and Beckman Research Institute
  Dr **Suzanne Peterson**, Center for Regenerative Medicine, The Scripps Research Institute, La **Jolla, CA**
  Discussant, Professor **Anne Kovalainen**, Turku School of Economics
- ***General Discussion***