KIE Conference, Drexel/Torrance Center for Creativity and Innovation, Drexel University School of Education & American Creativity Association Collaborative Conference

Program & Book of Abstracts

Philadelphia, USA, 3-5 November 2017

Drexel University
Venues: Bossone Auditorium
1st floor, Bossone Research Enterprise Center
3140 Market Streets **&**
Science Center building, Room 340
3401 Market Street, Philadelphia, PA 19104







2018 INTERNATIONAL CONFERENCE ON Knowledge, Innovation and Enterprise

HOST COUNTRY: USA



Thematic Sections/Tracks:

Knowledge

Including teaching & (e-)learning in primary, secondary and higher education, knowledge-education, knowledge management, comparative knowledge, indigenous knowledge, Knowledge transfer partnerships, knowledge utilisation, intellectual property, library & information, Knowledge and technology

Innovation

Including business innovation, ICT/technology innovation including big data, analytics and deep learning, and management/organization innovation and open innovation

Creativity

Including traditional themes/concepts of creativity—process, product, personality and environment; business/organisational creativity, arts, media & digital creativity, creative industries & enterprise, digital design & architectures, craft & animation, creativity in science and technology

Enterprise

Including entrepreneurship, marketing & strategy, HR, talent & development, servant/leadership in enterprise, SME business finance & accounting, business analytics, supply chain management, international business & management & family business/ethnic minority entrepreneurship

Featuring



4th E. Paul Torrance International Roundtable on Creative Thinking

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2018 Reisman Diagnostic Creativity Assessment (RDCA) Special Interest Group Presentations

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Big Data, Deep Learning & Predictive Analytics

*There will be **opportunities to publish papers** in the KIE Conference publications—**2018 Creativity book and Research Papers In Knowledge, Innovation and Enterprise, Volume VI 2018**—and selected papers will be published in the associated journal of the conference—see www.ijkie.org*

Content

Conference Program: 3–5
Abstracts: 7–16

International Conference on Knowledge, Innovation and Enterprise
American Creativity Association
Drexel/Torrance Centre for Creativity & Innovation, Drexel University
Drexel University School of Education

Whole Conference Program – 3 November 2017
Friday 3 November 2017
Venue: Bossone Auditorium, 1st floor, Bossone Research Enterprise Center
3140 Market Streets Philadelphia, PA 19104

8.00 – 5.00	Registration
8.00 – 9.00	Continental Breakfast
9.00 – 09.05	*James Ogunleye, 2017 KIE Conference Chair* Welcome
9.05 – 09.15	*David Turner, PhD, University of South Wales, UK* Opening remarks – best paper recognition awards ***(New Book: Creativity, Innovation and Wellbeing)***
9.15 – 10.15 10.15 – 10.30	**Conference Keynote:** *Dominic F. Gullo, PhD, Associate Dean for Research in the School of Education at Drexel University, Philadelphia, USA* *followed by Q&A*
10.30 – 11.00	Coffee Break

The 3rd E. Paul Torrance International Roundtable on Creative Thinking
Roundtable theme*:* "Fostering Creative Thinking in K-16 Education"

Venue: Bossone Auditorium, 1st floor, Bossone Research Enterprise Center
3140 Market Streets Philadelphia, PA 19104
Chair: *Larry Keiser*

11.00 – 11.05	*Larry Keiser, Director of Special Projects & Certification Officer, Drexel University, USA* *Chair of Torrance Roundtable* Introductory remarks
11.05 – 11.30	***Keynoter:*** *Darlene Boyd, EdD, Director of the University of California Irvine's Gifted Students Network, USA*
11.30 – 11.40	Q&A/Discussion
11.40 – 12.30	***Keynoters:*** *Tara Grey Coste, PhD, University of Southern Maine, USA* *Vlad Glăveanu, PhD, Associate Professor II at Webster University Geneva, Switzerland*
12.30 – 1.30	Lunch
1.30 – 2.10	***Introduction, thoughts on the theme, and keynote presentations****, with* ***Lead Discussants:*** *Katherine Boutry, PhD, West Los Angeles College, USA* *Jen Katz-Buonincontro, PhD, School of Education, Drexel University, USA*
2.10 – 2.35	Q&A/Discussion
2.35 – 2.55	***Summing up:*** *Chris Wilson, Aston University, UK*
2.55 – 3.00	**Concluding remarks** *Larry Keiser, Drexel University, USA*
3.00 – 3.30	Coffee/Tea break

2017 Reisman Diagnostic Creativity Assessment (RDCA) Special Interest Group Presentations

Topic: A creative exploration of autism, dyslexia and dyscalculia

Venue: Bossone Auditorium, 1st floor, Bossone Research Enterprise Center
3140 Market Streets Philadelphia, PA 19104

RDCA Chair: *Larry Keiser*

3:30 – 4:10	***Presenters*** *Larry Keiser, School of Education, Drexel University, USA* *Fredricka Reisman, PhD, Drexel's School of Education, Drexel University, USA* *Lori Severino, EdD, School of Education, Drexel University, USA* *Helene Maliko-Abraham, EdD, School of Education, Drexel University, USA* *James Connell, Ph.D. A.J. Drexel Autism Institute*
4:10 – 4:30	*Q&A/Discussion*

2017 ACA Award, Presidential Induction & Drexel/Torrance Lecture

Venue: Bossone Auditorium, 1st floor, Bossone Research Enterprise Center
3140 Market Streets Philadelphia, PA 19104

Chair: *Fredricka Reisman*

4:30 – 4:40	***Opening Remarks*** *Fredricka Reisman, PhD, Outgoing President, American Creativity Association*
4:40 – 5:00	**ACA Award Ceremony** • Helene Maliko-Abraham, E. Paul Torrance Graduate Student Research Award • Bonnie Crammond, Lifetime Creative Achievement Award • Rick Kantor, David Tanner Champion of Creativity Award • Vertex, Inc., Corporate Special Achievement Award • Alan and Nadeen Kaufman, Creativity Hall of Fame
5:00 – 5:05	***Induction*** *James C. Kaufman, PhD, Professor of Educational Psychology, Neag School of Education, University of Connecticut & Incoming of the President American Creativity Association*
5:05 – 5:06	*Drexel/Torrance Lecture*: James C. Kaufman Introduces Speaker
5:06 – 6:05 6:05 – 6:30	***Drexel/Torrance Lecture*** *Pablo P.L.Tinio, PhD, Associate Professor, Department of Educational Foundations Creativity and Aesthetics Lab, Montclair State University Montclair, New Jersey, USA* **Followed by Q&A**
6:30 – 8:00	Drexel/Torrance Lecture Reception: **Lobby** of Bossone Research Enterprise Center

AWARD RECIPIENTS

Helene Maliko-Abraham, Ed.D.
E. Paul Torrance Graduate Student Research Award

The E. Paul Torrance Graduate Student Research Award honors Dr. Torrance's lifetime commitment to supporting graduate student studies. This award recognizes a graduate student (at the masters or doctoral level) whose study shows promise that he or she will become a leader in the field of applied creativity. The awardee is required to present his or her work at the upcoming ACA Annual Conference.

Bonnie Crammond
Lifetime Creative Achievement Award

The Lifetime Achievement Award is presented to an individual whose life and career are characterized by extraordinary creative accomplishments that have substantially contributed to the betterment of society. Such accomplishments may be in the form of inventions, discoveries, works or performances of art, a body of research, educational curricula or practices, professional service, or service to the community in general.

Rick Kantor
David Tanner Champion of Creativity Award

The Champion of Creativity Award is presented to an individual who has been an outstanding proponent of creativity and has put forth extraordinary effort in the service of creativity as evidenced by their vigorous advocacy for the development and support of programs or environments that support and encourage creativity and/or their courage and persistence as an advocate or sponsor of a valuable concept, service, or product.

Jeff Westphal and Vertex, Inc.
Corporate Special Achievement Award

The Corporate Special Achievement Award is presented to an organization who has made an outstanding creative contribution to the field of creativity or to society in general. Such contribution may take the form of an invention, discovery, work or performance of art, research study, educational program, or special service to the community.

Alan and Nadeen Kaufman
Creativity Hall of Fame

The Hall of Fame honor recognizes a person who has substantially contributed to and enhanced the field of creativity by one or both of the following: outstanding scholarship that has led to significant understanding of creativity in theory and action or exemplary practice that has provided an important model for practitioners in the field of creativity.

Saturday 4 November 2017
Science Center building, Room 340
3401 Market Street, Philadelphia, PA 19104
Chair: *Gertrude Shotte*

8:30 – 9:10	*Ram Mudambi, PhD, Frank M. Speakman Professor of Strategy at the Fox School of Business, Temple University, Philadelphia, USA* ***Q&A will follow keynote***
9:10 – 9:40	*Nancy Songer, Dean, Drexel University School of Education, Fredricka Reisman, Director, the Drexel/Torrance Center for Creativity & Innovation, James Ogunleye, Chairman, KIE Conference & James Kaufman, President, American Creativity Association* How Four Diverse Organizations Demonstrate How 'Unity' and 'Cooperation' Outdo 'Divisiveness'
9:40 – 10:15	*Gareth Hughes, University of Derby, UK & Chris Wilson, Aston University, UK* **Presentation of the 2017 KIE Recognition Award-Winning Paper**: From transcendence to general maintenance: Exploring the creativity and wellbeing dynamic in higher education Followed by Q&A
10:15 – 10:50	*Katherine Boutry, West Los Angeles College* "Creativity takes Courage" **Presentation of the 2017 KIE Recognition Award-Winning Paper:** The Link Between Creativity Programs and Student Well-being in the Urban Community College Followed by Q&A
10:50 – 11:05	Coffee/Tea break
11:05 – 11:35	*Michael Brown, the University of Derby, UK, David Paterson (Presenting) Perth College, University of the Highlands and Islands, UK & Chris Wilson, Aston University, UK* Auralising the Sublime: An Investigation into Creativity and Process in the Pursuit of Sonic Perfection
11:35 – 12:05	*Chris Wilson (Presenting), Aston University, UK, Peter Lennox, Michael Brown & Gareth Hughes (Presenting), University of Derby, UK* How to develop creative capacity for the fourth industrial revolution: Creativity and employability in higher education
12:05 – 12:35	*Jonan Donaldson, Drexel University, USA* Global Creativity through the Lens of the Creativity Landscape Framework
12:35 – 1:05	Rochelle Kirby, *Drexel University, USA* Creativity: A Foundational Premise to Cultivating an Innovative Workforce
1:05 – 2.00	Lunch

PM Presentations: Innovation, Entrepreneurship & Big Data Analytics

Science Center building, Room 340
3401 Market Street, Philadelphia, PA 19104
Chair: James Ogunleye

2:00 – 2:30	*Maura Ann Dowling, Bryant University, United States* The Yoke of Finance
2:30 – 3:00	*Jari Kolehmainen, University of Tampere, Finland* Innovation (analysis tool) online?
3:00 – 3:30	*Steve Azaiki, Institute of Science and Technology Yenagoa, Bayelsa State, Nigeria & Gertrude Shotte, Middlesex University, London, UK* Entrepreneurship Education for Sustainable Development: A Look at Nigeria
3:30 – 4:00	*Festus Edobor, Cardiff Metropolitan University, UK* Entrepreneurial Strategies In Emerging Economy
4:00 – 4:20	Coffee/Tea break

Big Data & Analytics	
4:20 – 4:25	*James Ogunleye, Convenor & KIE Conference Chair* Welcome
4:25 – 4:55	*Chijioke O. Agomo, The Institute for Work Based Learning, Middlesex University, UK* Inclusion of public health in the MPharm curriculum in the United Kingdom: a content analysis
4:55 – 5:25	*James Ogunleye, KIE Chairman & Steve Azaiki, PhD, Institute of Science and Technology Yenagoa, Bayelsa State, Nigeria* Higher Education, Big Data and Learning Analytics
5:25 – 5:55	*Deryn Graham, PhD, Data Analytica, London, UK (online)* The Societal and Ethical Impacts of Big Data Science
5:55 – 6:25	***Keynote**: Dom Heger, PhD, DHTechnologies & Data Analytica, Texas, USA* AI Robotics – SLAM Status Quo and Future Directions **Followed by Q&A**
6:25 – 6:55	***Keynote:** Alain Biem, PhD, Data Scientist, Data Analytica, USA (online)* Management of The Analytic Lifecycle for Big Data
6:55 – 7:00	*James Ogunleye* Closing Remarks
7:00 – 8:00	Networking: Wine & Nibble Event – Wahoos Tacos & More, Drexel University Campus, 3180 Chestnut Street

ABSTRACTS

"Creativity takes Courage" The Link Between Creativity Programs and Student Well-being in the Urban Community College

Katherine Boutry, West Los Angeles College

Using data from student self-assessment surveys, this paper presents a test case for a new creativity program at West Los Angeles College and its link to student well-being. The first program of its kind in California, and the first in a community college anywhere, West Los Angeles College enjoys an exciting educational environment, surrounded by the burgeoning entertainment industry, aerospace industry, Silicon Beach, and multiple renowned institutions of higher learning. The college is thus well-poised to capitalize on the creative synergies made possible by the proximity of these industries and resources. Nevertheless, as an urban community college, WLAC has a traditionally underserved population with economic challenges. This paper posits that what might initially look like a disadvantage is actually a strength in developing a creativity program, and argues that a creativity program may enhance student well-being *especially* at urban community colleges. By showing students how their obstacles are opportunities for growth, and by giving them concrete skills to enhance their creative problem solving, this paper suggests that a creativity studies program significantly enhances well-being among students.

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From transcendence to general maintenance: Exploring the creativity and wellbeing dynamic in higher education

Gareth Hughes, University of Derby, UK
Chris Wilson, Aston University, UK

The issue of wellbeing in higher education has been an increasing area of discourse and action in recent years, driven considerably by increasing rates of recorded mental illness and apparent reductions in student resilience. With increasing recognition of the wellbeing challenge faced by the whole academic community, it is now incumbent on universities to move beyond deficit model support frameworks, to balance the necessary and essential challenge of study in higher education with the need for therapeutic effective interventions capable of engaging students and staff. There is a growing body of evidence relating to the health benefits of participation with creative activity, and engagement with creative experiences. This chapter presents a focused review of the creativity-wellbeing-learning dynamic to explore the possible opportunities for a move beyond the mere provision of supplementary student support. Given the increasing significance attached to creativity as a graduate attribute, the answer to the wellbeing challenge may be to question the notion of

academic and therapeutic as being mutually exclusive ideals. Shouldn't effective academic challenge improve wellbeing? Might the challenge actually provide the solution?

Correspondence
Gareth Hughes, University of Derby, UK
Chris Wilson, Aston University, UK

The Yoke of Finance

Maura Ann Dowling, CFP®; Finance Lecturer, Bryant University

The Bryant University undergraduate Real Estate Finance course is "a study of instruments, methods, and institutions involved in real estate finance. Students examine the financial techniques of risk and return evaluation, as well as the changes in the mortgage market and the economic environment." Ending the course with the 2008 Financial Crisis allows for an exploration of how risk and return were and were not framed a priori. The ***yoke of finance*** is explored in two ways: (1) financial management is a burden to be borne and (2) a union with the financial system that is workable and not workable for various agents and principals in the system. How generative and values-based the risk and return thinking is creates an opportunity for cultivating both strength and flexibility in learners' approaches to financial decision making. The use of tension, paradox, structure, forms, idealizations, and intentions will lead the learner to conscious creative financial management practices in their staged projects. Applying a philosophic learning process about whom the real estate financial system is meant to serve and the human feeling values that need not be traded away will facilitate modelling the ***yoke of finance***. In the end, the 2008 Financial Crisis will present a contrasting series of flawed frameworks to present a cautionary tale for praxis.

Correspondence
Maura Ann Dowling, CFP®
Finance Lecturer, Bryant University, USA

Global Creativity through the Lens of the Creativity Landscape Framework

Jonan Donaldson, Drexel University, USA

The incredible spectrum of creativity research around the world is diverse with unique aspects within each culture, as well as aspects general to all cultures in which such research is conducted. This study uses the Creativity Landscape conceptual framework to identify these cross-cultural and culturally-specific patterns, as well as differences among cultures in conceptualizations of creativity. The findings reveal a dominance of originality or novelty in definitions of creativity across cultures, as well as research focus on assessment, creativity in education, personality factors, and links with intelligence. In the area of creative cognition, the concept of divergent thinking outweighed other concepts such as metaphor, framing, abducting reasoning, or pattern recognition. In the area of creative processes, there was an emphasis on idea generation, but less emphasis on other processes such as preparation, incubation, or refining. In the area of creative environment there was an unexpected finding of an emphasis on playfulness. Finally, in the area of creative states of mind, the global

influence of Torrance can be seen in the emphasis on tolerance of ambiguity and openness to experiences. Among these four areas, the balance was tipped in favor of creative cognition and creative processes, with little attention paid to creative states of mind or creative environments. The findings also revealed a missing element in the creative context and environment category of the Creativity Landscape framework—specifically the need for an unregulated environment.

Correspondence
Jonan Donaldson, Drexel University, USA

Creativity: A Foundational Premise to Cultivating an Innovative Workforce
Rochelle Kirby, Drexel University, USA

When the environment is "permissive and supportive" creativity is more readily expressed with a higher degree of confidence and self-actualization. In a time where technology and digital advancements are rapidly changing the landscape of nearly every known industry, those companies and initiatives that will thrive and even survive are those who both understand the value of cultivating a creative environment. This workshop is designed to provide participants with both a practical guide and motivational tools that will enable them to motivate their existing workforce, build a healthy work environment, use creativity as the springboard for developing a culture of team building, and embrace innovation as an invaluable ally in planning for the future vision.
Correspondence
Rochelle Kirby, Drexel University, USA

Entrepreneurship Education for Sustainable Development: A Look at Nigeria
Steve Azaiki, Institute of Science and Technology Yenagoa, Bayelsa State, Nigeria
& Gertrude Shotte, Middlesex University, UK

This paper endorses the notion that entrepreneurship is a key driver of Nigeria's economy. Over the past decades, entrepreneurially-inclined people have played a major role in the establishment of many small businesses, some of which have grown into big enterprises. It is this very entrepreneurial spirit together with the resulting successes that the paper contends are crucial for Nigeria's sustainable development. But if these energetic initiatives are to prop up Nigeria's economy and sustain its development, the need for entrepreneurship education becomes acute. The paper employs an analysis of related literature, including the Federal Government's Vision 2020 and the Federal Ministry of Education (FME) mission statement, to support the contention made. It acknowledges that entrepreneurship education is an on-going process that should permeate all levels of the education system, even post-compulsory education. The paper concludes that entrepreneurship education is not an option if Nigeria is to fulfil the tenets of its Vision 2020, and more importantly, if entrepreneurial activities remain the mainstay of the Nigerian economy. It therefore suggests that FME should put mechanisms in place that will ensure that all education institutions give entrepreneurship its rightful place in the curriculum. This obviously has serious implications for teacher training and teacher education, for teachers and lecturers should be well equipped to help learners to develop skills that can assist them

to experience ground-breaking inventions. Competent teachers should be able to nurture the level of creativity needed to develop and maintain the entrepreneurial spirit that is not only vital to address unemployment issues, but also crucial for Nigeria's sustainable development.

Keywords: entrepreneurship, education levels, creativity, sustainable development, teacher development

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Inclusion of public health in the MPharm curriculum in the United Kingdom: a content analysis

Chijioke O. Agomo, Middlesex University, UK

There is now a demand for a public health-oriented pharmacy education and practice that will empower pharmacists with the necessary knowledge, skills, attitudes, and values crucial for contributing to public health. In Britain, it has been argued that the present Master of Pharmacy (MPharm) degree fails to prepare pharmacists with the skills needed to deliver the care and services expected of them in the future. The aim of this study was to describe the pattern of the United Kingdom (UK) undergraduate pharmacy curriculum, teaching and learning policy, particularly as it relates to public health. This study used a qualitative method (content analysis of websites) to describe the pattern of UK undergraduate pharmacy curriculum, teaching and learning policy. This involved choosing concepts for examination, and then quantifying and tallying their presence as well as exploring the relationships between the concepts identified. Public health remains an optional module in many UK Schools of Pharmacy. While several topics related to public health are often taught integrated with other modules, traditional pharmacy modules still dominate the UK undergraduate pharmacy curriculum. To enhance the role of pharmacists in public health, there is a need to develop the skill-sets of UK pharmacy students in macro-level public health activities.

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How to develop creative capacity for the fourth industrialrevolution: Creativity and employability in higher education

Chris Wilson, Chris Wilson, Aston University, UK
Peter Lennox, Michael Brown & Gareth Hughes, University of Derby, UK

With changing patterns of accountability in higher education, universities are becoming increasingly focused on performing well against a growing number of metrics. Many used as proxy measures to indicate value of educational experience, amongst the most common and perhaps most notable are those relating to graduate career destinations. Universities have never been more focused on ensuring that graduates are 'employable'. In the midst of the fourth industrial revolution, numerous studies highlight the potential significance and value of creativity, problem-solving and critical thinking, for successful navigation of the complexities of the future. Consequently, these capacities are becoming more significant in determining graduate career development and educational strategy in higher education. This chapter presents a synthesis of related fields of research to construct an outline framework for the development of organizational creativity and creative graduates concluding that there are aspects of current pedagogical practice capable of worthwhile reform.

Keywords: creativity, employability, strategy, future

Correspondence
Chris Wilson, Chris Wilson, Aston University, UK
Peter Lennox, Michael Brown & Gareth Hughes, University of Derby, UK

Auralising the Sublime: An Investigation into Creativity and Process in the Pursuit of Sonic Perfection

Michael Brown, University of Derby, UK
David Paterson Perth College, University of the Highlands and Islands, UK
Chris Wilson, Aston University, UK

This paper investigates the creative process in the production of modern musical designs, from initial concepts through to process realization and explores the notions of expression, creative-wellbeing and closure. At what point in the creative process may a work of Art be considered complete? Is a modern creative artefact, especially digital, ever truly finished? The work considers compositional design and intent and to what extent creative direction and coherence are meaningful initial considerations; should creativity be burdened with consideration of outcomes at the outset? Technology and creativity are very often bound together in the contemporary creative process; how do we manage the process to ensure that we satisfy our aesthetic compass and promote a direction of travel to a satisfying sonic destination? Prevalent theories of creativity, tools and techniques will be investigated that can be utilised to provoke often unanticipated, but nevertheless, rewarding results. The exploratory use of digital audio manipulation tools and chance operations are considered alongside more determinate predictable processes in order to elucidate the role of the unforeseen in the production of creative content. The authors will document their own collaborative work and provide perspectives on artistic case studies from the world of education, visual arts and music. The work will promote the direct integrated teaching of

creativity in music production and composition classes developing applicable tools that may help to stimulate original thought and address creative blocks, evaluating whether cognition of the creative mechanism offers positive stimulation in seeking creative solutions in the musical production process. Although angel investors are similar with venture capitals in what they pursue, but clearly show a difference in their size, role and mostly reason for investing. As individuals are able to freely invest regardless of strict due diligence, angels investors approach firms due to social connections, personal experience and interest. It is found by past studies that former experiences is the one of a major factors for individuals to move from one firm to another and also invest or joint partnership with others. In this paper, we investigate on how these individual angel investors decide to invest in a firm in the very early stages and hypothesize that social connections based on past relationships will be a strong factor for such decisions. Social connections such as being an alumni from school, same nationality and same region can create a homophliy that brings individuals together. We predict that due to such homophily, firms and investors with the same background will connect with each other rather than those who are not. We apply the DID model (Difference in Difference) after matching the groups that were invested through social connections and those who were not through the PMS method(Propensity score matching) to find the pros and cons of social investments. By comparing the investment amount and success factors of firms, we will be able to reveal the true effect of social connections in the entrepreneurial environment. We initially find that social factors as school and locations have a great effect on initial investment as most investors were from major top universities as well as the founders of venture startups. Also, funding was concentrated on certain states and area showing the importance of geographical homophily. This could be caused by more trust or effort, or perhaps more information due to such relationships. Such findings will be able to be used as reference for more efficient initial investments as it find that strong ties are to be more beneficial in the entrepreneurial network.

Keywords: entrepreneurship, investor, network, social background

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David Paterson, Perth College, University of the Highlands and Islands, UK
Chris Wilson, Aston University, UK

The Societal and Ethical Impacts of Big Data Science

Deryn Graham, Data Analytica

The Big Data phenomenon, due in part to the convergence of factors, such as Cloud Computing and the Internet of Things (IoT), have led to the digitization of society and the resulting massive increase in (big) data generation. The information pool that is generated worldwide is said to double every twenty months, however, it is its fusion, not just its generation, which poses challenges for society, ethics and even the epistemology of knowledge. Several issues regarding the exploitation of big data and analytics resonate between questions of “if” and “how” it should be exploited. The question of “if” is intrinsically linked with ethical concerns, and the issues of privacy and security, whilst the question of “how” revolves around the pragmatic concerns and the issues of People, Processes and Technologies. The objectives of this paper are to identify the societal and ethical issues that

big data science brings. The paper looks at the issues and the emergence of the term; “data harm”. Several technological and business cases for ethical big data science are discussed; examples include Care.data and Deep Mind. Additionally, existing frameworks to address the ethical concerns of big data analytics are evaluated and Key Performance Indicators (KPIs) for big data analytics are identified. Finally, the main points are summarised and conclusions drawn.

Keywords: big data society and ethics, analytics, cloud computing, Internet of Things (IoT), data harm.

AI Robotics – SLAM Status Quo and Future Directions

Dom Heger, Data Analytica, USA

Simultaneous Localization and Mapping (SLAM) consists of the concurrent construction of a model of the environment (labeled as the map) and the estimation of the state of the robot moving within it. The past decade has seen major SLAM advancements and new SLAM algorithms. The bulk of work has focused on improving the computational efficiency while ensuring consistent and accurate estimates for the map and the vehicle pose. Further, some research emphasis has been on issues such as non-linearity, data association and landmark characterization, all of which are vital to move a practical and vigorous SLAM implementation forward. It is safe to state that we are at a point with SLAM where we can enable large-scale real-world SLAM applications and witness a steady transition of the technology into the main-stream industry. The ability to simultaneously localize a robot and accurately map its surroundings is considered by many to be a key prerequisite of truly autonomous robots. However, few approaches to this problem scale up to handle very large numbers of landmarks that may be present in real life scenarios. Kalman filter-based algorithms (as an example) require time that is quadratic to the number of landmarks to incorporate each sensor observation and hence scalability is a concern. In this talk, we analyze the current state of SLAM and consider future directions. By considering the status quo, we describe open research challenges and new research opportunities that deserve watchful scientific investigation. One of the topics discussed in the talk revolves around the impact that deep learning will or should have on SLAM. Actual demonstrations will support the discussion.

Higher Education, Big Data and Learning Analytics

James Ogunleye, Middlesex University, UK & Steve Azaiki, Institute of Science and Technology Yenagoa, Bayelsa State, Nigeria

The UK higher education has a responsibility to provide data in specified form to the Higher Statistics Agency (HESA), an agency of the UK government charged with the responsibility for collecting data from higher education colleges, universities and other providers of higher education. The HESA-collected data is provided to the UK government and higher education funding agencies to inform state regulation, funding policy and mechanisms in the higher education sector. For many universities, however, this government-encouraged data-driven culture is generally seen as a compliance necessity – something that has to be done for reporting purposes. Thus, the potential use of internally-generated data remains largely untapped. The recent phenomenon of Big Data, a quantum increase in the amount of digital

and physical data that exist and the innovation that surrounds the use of this data, has brought home the importance of analytics in the higher education sector. This is more so as an increasing amount of student data, especially on student learning, is fluid and the need to perform analytics on the data becomes a critical necessity. This paper examines the phenomenon of Big Data in higher education and how analytics can be used to derive actionable insights from universities' own internally-generated data. The paper concludes that engaging with big data and learning analytics will help universities to make better use of, as well as leverage their data assets as related to student learning.

Entrepreneurial Strategies in an Emerging Economy
Festus Edobor, Cardiff Metropolitan University, UK

Entrepreneurship and Innovation remains a frustrating pursuit in emerging economies. Failure rates for these ventures are high, and even successful companies cannot sustain their performance. The root cause is that companies fall into the trap of adopting whatever best practices are in vogue or aping the exemplar innovator of the moment. Entrepreneurs should therefore articulate an innovation strategy that stipulates how their firm's entrepreneurial innovation efforts will support the overall business strategy. This will help them make trade-off decisions so that they can choose the most appropriate practices and set overarching innovation priorities that align all functions. There is no single route to entrepreneurial success or failure: successful entrepreneurs are those who can identify and adjust their entrepreneurial strategies according to their social capital and capabilities. Therefore, this paper has identified three entrepreneurial strategies- framing, convening and multivocality in an emerging economy. Using a sample of 20 entrepreneurs to test the hypothesis using a multiple regression analysis, we find that these strategies can help Entrepreneurial and economic development in an emerging economy.

Keywords: Entrepreneurship, Emerging economy, Innovation, Strategy and Economic development

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Innovation (analysis tool) online?
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All the firms need to renew themselves, i.e. innovate in order to stay competitive on the market. That holds true also for SMEs. All the firms are unique, but they can learn from other firms' behavior and experiences. The systematic nature of firms' renewal is based on a broad view on innovation. Innovation is not only about creating new technologies, new products and processes, but it encompasses also new organisational forms, procedures and practices. In addition, opening of new markets, new distribution channels, new materials etc. can be considered as innovations from the view of a firm. The key is that the new ideas are applied in practice and that they provide the firm with value added. Innovations are usually a result of systemic, hard work taking place in different kinds of innovation processes. These notions

emphasize the importance of analytical and systematic innovation management. In the SME context, the innovation management is not "rocket science", but more like strategic actions to renew the operations of the firm. However, strategic innovative actions call for good innovation capability referring to firm's ability to create and utilize different kinds of resources and competences, both internal and external, within its own innovation activities. The innovation capability is based on sufficient analytical skills, appropriate knowledge on the firm's internal resources and competences and good understanding of its own operational environment, i.e. firms' own innovation environment. The concept of firms' own innovation environment is based on the notion that the actual innovation processes may involve a large number of actors ranging from suppliers and customers to universities and other research and technology organisations (RTOs). In this paper, it is argued that the firms' internal and external elements related to the innovation activities should be analysed on three interrelated levels: *1. structural level, 2) level of organisational relationships* and *3) individual level*. From this point of departure, in this paper, the key principles of a web based innovation analysis tool for SMEs are developed and examined. The online tool aims at facilitating the development of SMEs' innovation capabilities and activities by complementing the actual analysis with additional information. Consequently, in the long run, the innovation analysis tool can develop into a practical online tool for the actual innovation activities of the SMEs. On the other hand, the idea is also to gather empirical data on SMEs' innovation capabilities and activities via the use of the analysis tool. This data will be used for both the research and development purposes. In terms of research, the data increases our understanding concerning the actual innovation activities of SMEs. In terms of development work, the data helps the involved development organisations to direct and reshape their policy measures and services.

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Who invests in who?: A study on the investor relationship in the entrepreneurship network
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Although angel investors are similar with venture capitals in what they pursue, but clearly show a difference in their size, role and mostly reason for investing. As individuals are able to freely invest regardless of strict due diligence, angels investors approach firms due to social connections, personal experience and interest. It is found by past studies that former experiences is the one of a major factors for individuals to move from one firm to another and also invest or joint partnership with others. In this paper, we investigate on how these individual angel investors decide to invest in a firm in the very early stages and hypothesize that social connections based on past relationships will be a strong factor for such decisions. Social connections such as being an alumni from school, same nationality and same region can create a homophliy that brings individuals together. We predict that due to such homophily, firms and investors with the same background will connect with each other rather than those who are not. We apply the DID model (Difference in Difference) after matching

the groups that were invested through social connections and those who were not through the PMS method(Propensity score matching) to find the pros and cons of social investments. By comparing the investment amount and success factors of firms, we will be able to reveal the true effect of social connections in the entrepreneurial environment. We initially find that social factors as school and locations have a great effect on initial investment as most investors were from major top universities as well as the founders of venture startups. Also, funding was concentrated on certain states and area showing the importance of geographical homophily. This could be caused by more trust or effort, or perhaps more information due to such relationships. Such findings will be able to be used as reference for more efficient initial investments as it find that strong ties are to be more beneficial in the entrepreneurial network.

Keywords: entrepreneurship, investor, network, social background

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A Method for Normalizing Students' Scores -Case Study -Faculty of Information Technology At Al-Ahliyya Amman University

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Assessment and evaluation of students in a percentage based grade system is proven to be unfair, biased and in many cases, lead to unrealistic evaluations, and unreasonable results. This is basically due to lack of understanding by instructors, who act just as a calculator without any considerations to any measures or rules; i.e. they just add up to totals of exams and assignments given to their students, no adjustments are done, and when done, they are not fair. Unfairness comes from adjusting all grades by an x amount of marks that are either added (to raise the grades) or deducted (to lower the grades). In this paper, we are proposing a system that is based on a mathematical approach for adjustments of grades based on criteria that we'll prove to be sound, efficient and fair to all students in any course at Amman University, with an instructor based on their performance and compared to the rest of the students in the specific class.

Keywords: polynomial, instructor, grade

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