The Convergent Innovation Webinar Series:

Inventing "One-World" Solutions for Lifelong Wellness and Sustainable Economic Growth

Applied Complexity: From Epistemic Drift to Epistemic Shift

William Sutherland, MD is a general practice physician presently working in primary mental healthcare, general practice psychotherapy, and functional medicine. He is the innovator of the Complexity Medicine paradigm and the author of the book on the subject, Grand Rounds: Healing Wisdom for a Complex World. Complexity Medicine, by answering the call towards greater holism, looks at the embodiment of individual, cultural, and ecological health from an aesthetic, patterned, relational, and systems-based stance. He is a graduate of the Michael G. DeGroote School of Medicine at McMaster University and has completed a residency in rural family medicine. Presently, he is an adjunct faculty member through the School of Environment, Resources, and Sustainability at the University of Waterloo and an External Affiliate Researcher at the Waterloo Institute of Complexity and Innovation (WICI). Research, discussion, and teaching interests include complexity and health, second-order cybernetics, systems biology and physiology, indigenous ways of knowing, radical constructivism, and epistemological and ontological considerations within the complexity sciences.

July 16, 2020

11:00 am EST

(2 hrs in length)

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Chair: Laurette Dubé (Scientific Director of MCCHE)

Co-Chair & Moderator: John G. Keogh (Managing Principal, Shantalla Inc. Toronto)

ABSTRACT: One of the commonly cited criticisms leveled against complexity science specifically, and system's thinking broadly, is that although it provides a new lens of analysis and a novel framework for understanding our world in its interrelationships, however, this understanding has not brought about sufficient societal change when compared against its reductionist brethren. Conversely, a reductionist-positivist-materialist approach has rendered a tremendous change in the world; yet at cost of unintended consequences now presenting us with a series of interconnected, unmitigated existential and catastrophic risks, and a host of wicked problems at a global scale. How then does one engage in transforming a complex world, in a complex time, complexly? This webinar will look to what has been called the "original science of complexity"; the Cybernetic school of thought, utilizing the specific distinction between notions of first-order and second-order understandings of science and its applied offspring (medicine, engineering, economics, etc.) as a way of shifting from an understanding "about" systems, to one of participation "within" systems to help midwife movements of change in the world that could be considered ecology wise. In this talk, we will examine the first-principles of a second-order complexity such that we may better move in the world as effective agents of systemic transformation in answer to the existential challenges of our times.

Panel Discussion: A multi-disciplinary panel will follow the presentation to advance convergence science and innovation on the multiscale mechanisms for behavioral change and ecosystem transformation at scale for solutions to COVI-19 recovery and beyond. Taking the health sector as entry point, the panel will also address challenges at the juncture with agriculture and food that are also tied to the interface between complex and dynamic system of systems.

ABOUT THE SERIES: The **Convergent Innovation Webinar Series** features cutting edge science, technology and innovation in agriculture, food, environment, education, medicine and other domains of everyday life where grand challenges lie at the convergence of health and economics. Powered by data science, artificial intelligence, and other digital technologies, this disciplinary knowledge bridges with behavioural, social, humanities, business, economics, social, engineering, and complexity sciences to accelerate real-world solution at scale, be it in digital or physical contexts. Initiated in the agri-food domain, the series is now encompassing other grand challenges facing modern and traditional economies and societies, such as ensuring lifelong wellness and resilience at both the individual and population levels.

Global Pulse Innovation Platform:

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Chair: Laurette Dubé, initially trained as a nutritionist, also holds degrees in finances (MBA), marketing (MPS), and behavioral decision-making/consumer psychology (PhD). Dr. Dubé is Full Professor at the Desautels Faculty of Management, McGill University. Her research focuses on the study of affects, behavioral economics, and neurobehavioral processes underlying consumption, lifestyle, and health behavior. Her translational research examines how such knowledge can inspire effective interventions. She is also the founder and scientific director of the McGill Centre for the Convergence of Health and Economics, a unique initiative to push the boundaries of science to tackle societal and economic challenges and foster individual and collective health and wealth.

Moderator: John G. Keogh is a strategist, C-level advisor and academic researcher with 25 years of executive leadership roles as Director, VP and SVP in global Supply Chain Management, Information Technology, Technology Consulting and global Supply Chain Standards. He advises the public and private sectors worldwide and is a regular subject matter expert on TV and Radio. Mr. Keogh is managing principal at Toronto-based, niche advisory and research firm Shantalla Inc. Mr. Keogh holds a PG diploma and an MBA in Management and an MSc in Business and Management Research in transparency and trust. He is currently completing doctoral research on transparency and trust in food chains at Henley School of Business, University of Reading.

Dr. Chrystopher Nehaniv is a Mathematician, Computer Scientist, Complex Adaptive Systems Researcher, and, since August 2018, Full Professor in the Departments of Systems Design Engineering and of Electrical & Computer Engineering at the University of Waterloo in Ontario, Canada. He is also affiliated with the University of Hertfordshire in the United Kingdom, where he served as Director of the Centre for Computer Science & Informatics Research. He is founder of the Waterloo Algebraic Intelligence & Computation Laboratory (WAICL), and with Prof. Kerstin Dautenhahn, a co-founder of the University of Waterloo's Social and Intelligent Robotics Research Laboratory (SIRRL). Professor Nehaniv is also a member of the Waterloo AI Institute and the steering committee of the Waterloo Institute for Complexity and Innovation (WICI). He received his B.Sc. with Honors in Mathematics (Univ. of Michigan, 1987) and a Ph.D. in Mathematics (Univ. of California, 1992) for work in the algebraic theory of semigroups, groups, and automata.

Dr. Nora Bateson, Founder and President of the International Bateson Institute (IBI), a research group that specializes in transcontextual research into human and other living systems. Nora is also an independent film-maker, writer, policy adviser and lecturer. Her work asks the question "How we can improve our perception of the complexity we live within, so we may improve our interaction with the world?". She wrote, directed and produced the award-winning documentary, An Ecology of Mind, a portrait of her father, Gregory Bateson. Nora's work brings the fields of biology, cognition, art, anthropology, psychology, and information technology together into a study of the patterns in ecology of living systems. Her book, *Small Arcs of Larger Circles,* released by Triarchy Press, UK, 2016 is a revolutionary personal approach to the study of systems and complexity.

Dr. Zachery Stein is a writer, educator, and futurist working to bring a greater sense of sanity and justice to education. He studied philosophy and religion at Hampshire College, and then educational neuroscience, human development, and the philosophy of education at Harvard University. While a student at Harvard, he co-founded what would become Lectica, Inc., a non-profit dedicated to the research-based, justice-oriented reform of large-scale standardized testing in K-12, higher-education, and business. He has published two books. *Social Justice and Educational Measurement,* which was based on his dissertation and traces the history of standardized testing and its ethical implications. His second book, *Education in a Time Between Worlds*, expands the philosophical work to include grappling with the relations between schooling and technology more broadly. He writes for peer-reviewed academic journals across a range of topics including the philosophy of learning, educational technology, and integral theory. He's a scholar at the Ronin Institute, Co-President and Academic Director of the activist think-tank at the Center for Integral Wisdom, and scientific advisor to the board of the Neurohacker Collective and other technology start-ups.

Dr. Alayne Adams is an applied social scientist with expertise in global urban health and nutrition, health systems research and the social determinants of health. Her research takes her close to the complex realities that give rise to health inequities, and seeks to inform actions that address these inequities. She is also a creative and dedicated educator and mentor, with decades-long experience teaching in and beyond the classroom in Africa, Asia and North America. From 2010 to 2016 she was based in Dhaka, Bangladesh where she led pioneering research on the health and healthcare challenges of rapid urbanization, focusing in particular on the needs of the urban poor and disadvantaged and how to engage the vast and diverse urban private sector around public health goals of quality and equity of access. Among their innovations was an ICT tool for urban health planning and governance http://urbanhealthatlas.com/. Dr. Adams began her academic career at Columbia University's Mailman School of Public Health following post-doc work as a MacArthur Fellow at the Harvard Centre for Population and Development Studies. A recipient of the Commonwealth Scholarship, she completed her PhD in Public Health and an MSc in Human Nutrition at the London School of Tropical Hygiene and Tropical Medicine. Currently, she is affiliated with McGill University's Department of Family Medicine, Montreal. Canada.