Rotman Institute of Philosophy
Strategic Plan (2016-2021)
[Final - December 2016]

The challenges facing contemporary society are complex and multi-faceted, and do not fall neatly within disciplinary boundaries. The Rotman Institute of Philosophy, founded in 2008, is a global leader in interdisciplinary research and training that responds to these challenges. Inspired by Joseph Rotman's recognition of the distinctive capacity of philosophy to clarify thinking about complex questions and to bridge intellectual divides, the Institute brings the benefits of philosophical thinking to the scientific community and the broader public.

The Rotman Institute's vision is to make progress on foundational and socially relevant questions by leading collaborations bridging philosophy, the sciences, and society. Our mission is to catalyze and lead the production of interdisciplinary research with broad impact; train the leaders of tomorrow in both the humanities and the sciences; and to educate and lead public discourse on scientific and philosophical challenges facing Canada and the world.

This plan is guided by critical reflection on what we have achieved in the Institute's first five years, along with an assessment of the opportunities and challenges we foresee in the years ahead. The most significant opportunity is becoming an Interdisciplinary Research Institute and taking our place in Western University's Interdisciplinary Research Building in 2018. This plan outlines how we will take advantage of this new status to pursue our ambitious vision. We envision a Rotman Institute that plays an essential role within Western, namely to catalyze interdisciplinary research across the humanities and the sciences, in line with priorities identified in Western's Strategic Plan. Our main challenge is to maintain a strong research community, given recent losses of senior faculty. The Institute has thrived in areas with stable intellectual leadership, and we can only fulfill our potential with a full faculty complement. We will create a distinctive research environment, that will inspire scholars from a variety of fields to pursue Rotman projects and enable them to explore new lines of research as part of interdisciplinary teams.

Innovative Research

The Institute's research will be structured around dynamic interdisciplinary research teams, including Rotman faculty, leading international scholars, postdocs, and graduate students. Our success will be reflected in recruitment of talented scholars, external funding, and research outputs such as high impact, peer-reviewed publications.

The Rotman Institute has achieved research excellence in three core areas, and has a growing presence in a fourth emerging area, each described briefly below. There are two overarching strategic priorities common to all four areas. First, the three core areas have thrived due to stable intellectual leadership. The Institute's success depends on recruiting intellectual leaders in these areas. It is a top priority to recruit world-leading scholars to fill the Rotman Canada Research Chair in Philosophy of Science and

the Chair in the Philosophy of Neuroscience. We will actively pursue the possibility of joint appointments with other units at Western, or nearby institutions, as a particularly effective way to support collaborative interdisciplinary projects. We will seek to bring distinguished Visiting Fellows to Western for extended research visits, to join our research teams, which will help to establish the Rotman Institute as a leading research centre.

Second, the Institute will help core faculty overcome obstacles that typically face interdisciplinary work. Scholars in all areas face strong incentives to work within their own disciplines. It takes time to find topics that can most fruitfully be addressed by integrating different disciplines, and interdisciplinary projects often need a long initial period of development before they can compete successfully for external funding. The Institute has successfully used modest internal grants to overcome these challenges in the last five years, and going forward will continue to support core faculty with competitively awarded internal grants. These internal grants will be designed to develop a culture of grantsmanship, allowing core faculty to develop strong track records as they pursue innovative new directions. In addition to supporting Tri-Council grant applications, we will build on recent successes with research sponsors that are more closely aligned with the Institute's vision. We will actively seek to identify further funding opportunities relevant to the Institute's core research areas, and provide staff support and peer guidance for faculty members preparing grants.

Ethics and Science

Scientific advances give rise to ethical challenges which cannot be resolved without using ethical analysis in conjunction with knowledge of the relevant empirical fields. Moral dilemmas that arise in the use of human subjects for medical research, for example, must be treated within the broader context of medical practice. Long-standing ethical debates, such as characterizing well-being and happiness and their normative significance, have been transformed by research in social psychology and behavioural economics. The Institute supports ethicists working in collaboration with policy makers and scientists to address ethical challenges, and to pursue ethical investigations informed by scientific research.

This area has been one of the Institute's research strengths since its inception. Under the leadership of Charles Weijer, who received Western's top research award, the Hellmuth Prize, in 2014, and was named a Fellow of the Royal Society of Canada in 2016, the Institute has contributed to both research and policy developments. Weijer and other Institute faculty in this area, including Anthony Skelton, Carolyn McLeod, Samantha Brennan, and Louis Charland, were members of collaborative teams that earned just under $10 million in external grants in 2011-16, primarily in the form of CIHR grants to teams including Weijer and McLeod. During the same period, ten PhD students and three postdoctoral fellows completed their training. The Institute's excellent placement record in this area reflects the distinctive interdisciplinary training these students have received. Spencer Hey holds a faculty position at the Harvard Center for Bioethics, and Andy Peterson (both supervised by Weijer) has been appointed at George Mason's Institute for Philosophy and Public Policy.

We will continue to support fruitful interplay among ethicists and empirical researchers, in areas exemplified by the following three ongoing research projects.

- *Research Ethics* (Weijer): Research conducted by Weijer with an international team of trialists, biostatisticians, and philosophers on the ethics of cluster randomized trials (CRTs) has shaped science policy internationally. CRTs randomize social groups rather than individuals to study interventions, and are used in knowledge translation and public health research. New research extends this work into the domain of pragmatic randomized controlled trials (PRCTs). PRCTs test treatments and policy changes in real world conditions and are ideal for informing health system reform. But PRCTs intermingle practice and research, challenging the clear distinction between these activities that is often presumed in codes of conduct. Weijer is working with an international team, with a similar mix of interdisciplinary expertise, to develop consensus ethical guidelines for PRCTs in light of this challenge.
- *Neuroethics* (Weijer, Owen): Adrian Owen and Weijer lead a research team exploring ethical issues raised by the use of neuroimaging after severe brain injury. The research team brings together neuroscientists, neurologists, neuropsychologists, sociologists, epidemiologists and philosophers, pursuing four main projects: (1) the assessment of decision making capacity in behaviorally nonresponsive patients; (2) the ethics of welfare as a moral framework for such patients who retain covert awareness; (3) the impact of neuroimaging on families of patients with a serious brain injury; and (4) ethical issues in the use of neuroimaging in comatose patients within days of serious brain injury. This successful collaboration between the Rotman Institute and the Brain and Mind Institute (BMI) will continue into the current Strategic Plan.
- *Well-being* (Skelton): This research aims to clarify the nature and ethical importance of well-being, happiness and life satisfaction in light of scientific findings related to them, and to utilize these findings to understand the nature well-being generally and in marginal populations, including children, the disabled and the behaviourally non-responsive. The resulting interdisciplinary understanding of well-being and life satisfaction, and how it can be measured, will inform public discussions and has various policy ramifications.

Given the Institute's strength and the pressing demand, both from within the academy and from policy makers, for research in this area, our top strategic priority is to enhance the active faculty complement substantially. We will recruit faculty members at Western (from various disciplines) as part of collaborative teams, and pursue opportunities to enhance the faculty complement (e.g., through junior appointments).

Foundations of Physics

Modern physics has transformed our conception of reality. Far from eliminating philosophy, advances in physics have challenged traditional ideas about the natural world in extremely perplexing ways. Making progress on these fundamental questions requires interdisciplinary collaboration. Philosophers study the conceptual foundations of a theory with a precision that is not demanded by applications, but yields greater clarity regarding our theories with long-term benefits. For this work to be of value, these philosophical reflections must draw on a deep understanding of physics. Several lines of work in

physics have prompted active public debates about the integrity of physics and the nature of scientific knowledge, which philosophers are uniquely prepared to address.

Western has a long-standing tradition as a global leader in foundations of physics. Markus Müller's recent arrival as a Tier II CRC has already strengthened collaborative ties with science departments at Western, and with the Perimeter Institute, where he holds an affiliate faculty position. Institute faculty in this area received roughly $4.4 million in external grants from 2011-16. This includes support from funding organizations whose mandate is closely aligned with the Institute's vision, the Foundational Questions Institute and the John Templeton Foundation. Faculty in this area supervised 9 PhD students and four postdoctoral fellows in the past five years, who have performed well in a competitive job market. UC San Diego, a top philosophy department, hired Kerry McKenzie (postdoc), and Molly Kao was appointed to a faculty position at the Université de Montréal directly upon completing her PhD.

Over the next five years we will establish the Rotman Institute as a research destination of choice for foundations of physics. Along with developing new projects, we will support ongoing work on two established projects and one emerging line of research:

- *Foundations of Quantum Physics* (Müller): Quantum mechanics (QM), for all its empirical success, still lacks a generally accepted interpretation. Müller has formulated influential axiomatizations of QM based on concepts that can be given clearer operational interpretation, working in collaboration with physicists and mathematicians. Based on this work, he further aims to characterize the unusual features of QM more precisely by situating it in a larger class of possible theories. Müller is one of the leading researchers in this area, and this line of work promises to clarify the basic concepts and structure of QM and help to understand the quantum world.
- *Cosmology and Spacetime* (Smeenk): In cosmology there have been surprisingly open debates regarding what constitutes sound methodology. Cosmology is different from other areas of the physical sciences, both in its subject matter and in the tools used to study it. Standard experimental and theoretical methods used in other physical sciences have little traction. These methodological difficulties make cosmology an urgent subject for philosophical research, which has drawn increased attention within the last few years. Smeenk is leading a project designed to review and set the agenda for this field, working with a group of philosophers, physicists and cosmologists. One aim is to provide cosmologists with better tools for thinking about the methodological challenges they face, to replace the outdated philosophical ideas they currently rely on, and to clarify how these tools radically restructure contemporary debates.
- *Computational Epistemology* (Corless, Smeenk): Digital computers have enabled mathematicians to pursue new approaches to discovering ideas, developing conjectures, and validating proofs. This emerging project focuses, in part, on the implications of novel computer use for the practice of mathematics. Furthermore, acknowledging the central role of computation in applied science demands a different understanding of the structure of scientific theories. The Institute has hosted conferences in the last two years on this theme. Corless is developing a project, working with computational scientists, mathematicians and philosophers,

extending into these more philosophical topics from his expertise in mathematical and scientific computing.

The top priority in this area is to ensure continuity of funding for postdoctoral fellows, who are able to extend the reach of Institute faculty with complementary specialized knowledge. Furthermore, Institute postdocs have played an active role in interdisciplinary training, mentoring graduate students, and establishing collaborative ties across disciplines.

Philosophy of Mind and Neuroscience

Contemporary research in neuroscience promises to lead to a much richer picture of our cognitive architecture, and the complex relationship between brain function and behavior. Yet it also raises challenges regarding how to integrate these ideas with philosophy and other fields. Neuroscientists have challenged psychology, for example, based on their ability to create concepts that seem to perform better than traditional psychological concepts in predicting behavior. Central aspects of our self-conception, such as regarding ourselves as conscious agents, capable of free choices for which we can be held morally responsible, may also be undermined by neuroscience. Neuroscience has a potentially transformative impact on a broad array of such fundamental issues; a new understanding of them demands a combination of scientific knowledge and philosophical acumen.

The Rotman Institute's move into Western's Interdisciplinary Research Institutes building will provide a unique opportunity to pursue collaborative research with scholars in the Brain and Mind Institute (BMI). This area has rapidly developed over the past five years as a result of collaborations with the BMI, leading to just over $2 million in external funding to Institute faculty. Three postdocs have been trained in this area. Three graduate students have completed their PhDs, including the first graduate of the Lab Associates program (described below). Western can become a global leader in this area, based on the enormous strength of the BMI and these strong collaborative ties with philosophy.

We aim to take full advantage of this setting, by pursuing topics exemplified by existing lines of work:

- *Consciousness* (Bayne, Mendelovici, Goodale, Owen)*:* Research in this area covers such topics as how to assess consciousness in brain-damaged patients; the role that conscious perception plays in the control of action; how to measure consciousness and characterize disorders of consciousness; and the relationship between consciousness and intentionality. There are many points of contact between the research that is being carried out on disorders of consciousness and the neuroethical research mentioned above.
- *Methodology* (Sullivan, Köhler, Viger): A primary aim of neuroscience is to understand how the brain gives rise to mental activity. It is widely recognized that achieving this aim requires input from multiple different areas of the mind-brain sciences, but these areas of science differ from each other in many ways. These differences raise questions regarding the prospects for a unified science of the mind-brain that philosophers are well-prepared to address. Do some areas of the mind-brain sciences employ methods or heuristics that are more suitable for shedding light on the mind-brain relationship than others? Are the methods used in different areas of the mind-brain sciences in competition or complementary? When are the

assumptions, methods and concepts appropriate to the explanatory goals, and when might they fail?

- *Taxonomy* (Sullivan, Viger, Goodale)*:* Developments in the cognitive sciences have raised pressing questions about the adequacy of our current ways of taxonomizing the mental. Does our current taxonomy carve the mind 'at its joints', or does it misrepresent the structure of mental reality in important ways? These questions are especially pressing with respect to the philosophy of psychiatry, for a better account of the nature of psychiatric disorders has the potential to deliver robust improvements in mental health outcomes.

The top strategic priority in this area is to recruit and retain a leading scholar for the Chair in Philosophy of Neuroscience, in order to provide intellectual leadership and to fulfill the enormous potential in this area. We will actively work with Western's development team to solicit funding for this position.

Ecological Philosophy

A broadly ecological perspective that gives salience to the complex interactions between organisms and their environments has transformed many areas of biology in recent decades. This new perspective has been a research focus at the Rotman Institute since its inception. Work by Barker, Desjardins, and their collaborators has focused on ecological resilience, conceptions of human nature and their implications for social change, and broad questions about stability and change in social-ecological systems. Current research considers how this ecological perspective informs thinking about global environmental issues, exploring the integration of earth systems and human institutions and investigating how we can best approach their governance given the complexity of the systems involved and the diversity of relevant kinds of knowledge. This work aims to support wiser choices in environmental policy, in agriculture and conservation, and especially in climate governance.

This is an emerging area of research at the Rotman Institute, with ties to researchers in various departments in the life and social sciences. Faculty have supervised one PhD student and three postdocs in this area in the last five years, and the postdocs have done particularly well following their time at Western. We will build further interdisciplinary collaborations to pursue topics illustrated by two emerging projects:

- *Climate governance* (Desjardins, Barker): The 2015 Paris Agreement on Climate Change introduces a far-reaching new framework for global climate governance. Building on our prior research on resilience and adaptive ecological management, and the expertise of colleagues working in environmental law and climate policy, we will investigate epistemological, ethical, and conceptual aspects of the challenges and the opportunities posed by this new policy framework.
- *Conservation and restoration of natural habitats* (Desjardins, Barker): Recognizing the extent of the anthropogenic transformation of the biosphere has profound implications for conservation biology and restoration ecology. Our objective is to investigate these transformations and collaborate with colleagues in biology and geography in the creation of new research tools

that improve our understanding of the functional integration of social and ecological processes.

Our top strategic priority in this area is to establish stronger ties with faculty members with related interests at Western, and to support recruiting faculty members in this area (either in philosophy or through joint appointments), so that the Institute can engage with a broader array of epistemic and ethical issues that arise in biology and the environmental sciences.

Interdisciplinary Training

We will train the next generation of scholars to engage complex problems from an interdisciplinary perspective, informed by rigorous philosophical thought. The caliber of incoming junior scholars, their research productivity, and their subsequent career trajectories will collectively measure the impact of our innovative training.

Doctoral training has been integral to the Institute's mission since its inception, and the recent influx of postdoctoral scholars has contributed enormous vitality to the Institute's research community. Western's long-standing strength in philosophy has allowed us to recruit excellent young philosophers. We will transition to a training model closer to that exemplified in the sciences, with scholars at different levels working together in collaborative research groups. This will lead to more fully integrated interdisciplinary training, as well as providing more opportunities for the involvement of science students and postdocs.

We will maintain the level of excellence of our graduate students and postdocs, based on these priorities:

- Enhance the Rotman Institute's standing as a destination of choice for graduate and postdoctoral training, with a distinctive emphasis on engaging science and the broader public. We will achieve this by offering entrance scholarships to recruit top students, and support to integrate them into interdisciplinary projects. We will use entrance scholarships and other research funding to support graduate students from other disciplines pursuing interdisciplinary projects.
- Maintain an active group of postdocs to ensure an effective training environment.
- Develop a global network of Rotman alumni who will remain involved with Institute projects, by bringing the world's most talented scholars to the Rotman Institute at an early stage of their career. We will expand from a regular newsletter into hosting alumni events of various kinds.

We will provide distinctive training opportunities to graduate students and postdocs, as follows:

- Offer interdisciplinary training in core research areas, modeled on the successful Lab Associates program, run in collaboration with BMI. This program places philosophy students in research labs at the BMI, providing a platform for the development of interdisciplinary projects that few other institutions can match. We will offer Rotman research seminars on this model, co-taught by faculty from different disciplines, to provide graduate students with interdisciplinary training. Courses of this type are being developed in applied ethics, ecological philosophy, and foundations of physics. We will also pursue the development of new degree programs where appropriate.
- Provide philosophical training to science graduate students and postdocs, in order to contribute directly to solving problems scientists face in the course of their research.

Philosophical training helps science students become better scientists, and equips them to tackle a broader range of problems. We will develop graduate courses designed with science students in mind, and pursue similar opportunities at the undergraduate level. We will also explore the feasibility of a graduate training fellowship, for students to pursue formal training in a field outside their home discipline (such as a master's degree), to acquire the expertise needed for interdisciplinary work.

- Integrate postdocs into the interdisciplinary training programs offered by the Institute, and establish effective mentoring relationships with graduate students. In addition to their direct contributions to research, postdocs have been effective at building bridges between different disciplines, and mentoring graduate students.

Policy and Public Engagement

The extreme specialization that enables rapid progress on focused research topics often creates barriers among disciplines, and between the academy and the public. Rotman Institute philosophers are especially well equipped to break down these barriers; we consider questions that span different fields, integrate insights from various sources, and investigate what individuals and societies should do. Our distinctive intellectual orientation creates opportunities to shape public policy, and for ambitious public engagement.

Research in science and ethics has had the most direct policy impact to date. Weijer's team produced the 2012 *Ottawa Statement*, the world's first ethical guidelines for the conduct of cluster randomized trials, which has had broad impact on science policy. To extend our capacity to provide guidance on normative aspects of public policy in this and other areas, we will partner with individuals and institutions with similar aims. We are in the early stages of developing a partnership with George Mason's Institute for Philosophy and Public Policy, which is extremely promising given our common aims and complementary expertise.

Our public engagement efforts will be structured around year-long themes, following the success of "Einstein@Rotman" in 2015. We will augment public lectures with activities that lead to constructive, open-ended dialogue with the community. We will pursue the following priorities:

- to develop and maintain sufficient staff expertise for effective engagement. Staff expertise, and continuity in dealing with media contacts, community organizations, and etc., is necessary for ongoing public engagement.
- to ensure active faculty involvement, by acknowledging the intellectual value of these contributions and providing faculty members with the tools and skills needed for effective knowledge mobilization.
- to have Rotman-sponsored events become a part of the cultural scene in London, by developing ties with community groups and other local institutions, and partnering with them to organize events and activities.
- to develop platforms for broader dissemination of Rotman Institute research, and to establish a role as expert consultants in core research areas, including increasing collaboration with CBC's Ideas program, and other media outlets.

Measuring Performance

The Institute's success in supporting innovative research projects will be assessed by tracking three different performance indicators. Since the Institute primarily supports the early phases of new research projects, we will track the longer-term trajectory of these projects to determine the impact of Institute funding. First, we will assess subsequent research inputs in the form of external funding to support further work, to determine the extent to which Institute support helps core faculty overcome obstacles to funding for interdisciplinary projects. Second, we will track the extent to which a project has succeeded in establishing an interdisciplinary research team. This will be done by measuring how well the project has inspired substantive contributions from core faculty members of the Institute, and scholars elsewhere, with appropriately diverse disciplinary backgrounds. Third, we will assess outputs of the project. This will include more traditional metrics for the quality of research produced and its subsequent impact. We will also measure other forms of impact outside philosophy: in particular, we will track the breadth of research output (across a wider range of journals), and high-level public engagement.

The Institute's novel training initiatives will increasingly reach two distinct groups. To date, the majority of graduate students and postdoctoral fellows have pursued academic careers based on their training in philosophy. Our success in training this core constituency is reflected in their placement record and early career trajectories, which we will continue to track. In particular, we will assess the impact of the lab associates program and similar initiatives on initial research directions and breadth of expertise. We will increasingly reach a second group of trainees, namely students in other disciplines who participate in research seminars, new degree programs, and Rotman research projects. We will work with our colleagues in other fields to evaluate the impact of our training opportunities on science students. Several of our graduate students and postdoctoral fellows have put their philosophical training to good use in non-academic careers. This reflects a societal need for leaders with an understanding of scientific research and its broader implications, and going forward the Institute will develop training programs to address that need. We will actively track the career options our trainees have upon leaving the Rotman Institute, and review our training programs in light of these outcomes.

Our success in pursuing more ambitious public engagement will be evaluated based on, first, our visibility and successful outreach to the community. This will be measured by assessing the numbers of people and organizations engaged in community partnerships, the attendance at co-sponsored events, and surveys to evaluate outcomes for community partners. Beyond tracking usage statistics for our social media accounts, blog, and YouTube channel, and traditional media coverage, we will collect demographic information and responses to brief surveys at all public events, in order to assess what has worked well and to gauge interest in future events. Second, we will evaluate the Institute's success in leading public discourse in areas where we have expertise, as reflected in, for example, high-profile publications for a broad audience, policy white papers, or providing research expertise and guidance to policy-makers.