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Canadian Journal of Bioethics
Revue canadienne de bioéthique

Canadian Journal of Bioethics
Revue Canadienne de Bioéthique

Global Living Ethics: Unveiling Practical and Theoretical Synergies Through Reflexive Balancing

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Volume 7, Number 4, 2024

URI: https://id.erudit.org/iderudit/1114960ar
DOI: https://doi.org/10.7202/1114960ar

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Publisher(s)

Programmes de bioéthique, École de santé publique de l'Université de Montréal

ISSN

2561-4665 (digital)

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Cite this article

Boudreau LeBlanc, A. (2024). Global Living Ethics: Unveiling Practical and Theoretical Synergies Through Reflexive Balancing. *Canadian Journal of Bioethics / Revue canadienne de bioéthique*, 7(4), 71–83. https://doi.org/10.7202/1114960ar

Article abstract

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Canadian Journal of Bioethics
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A Boudreau LeBlanc. *Can J Bioeth / Rev Can Bioeth*. 2024;7(4):71-83

ARTICLE (ÉVALUÉ PAR LES PAIRS / PEER-REVIEWED)

Global Living Ethics: Unveiling Practical and Theoretical Synergies Through Reflexive Balancing

Antoine Boudreau LeBlanc

Résumé
Au regard du portrait complexe de la bioéthique, cet article combine l'avenue théorique de l'approche Potterienne d'une bioéthique globale avec les méthodes de recherche en bioéthique, dans le but d'activer des compromis éthiques en gouvernance. L'approche Potterienne transcende les frontières disciplinaires traditionnelles, adoptant l'angle pragmatique de John Dewey, en faisant converger les méthodes philosophiques et empiriques. J'y préconise une synergie entre les approches empiriques micro-locales et macro-rationnelles globales. Par un cas pratique pour les bioéthiciens, je mets l'accent sur une perspective « globale » ancrée à l'échelle de l'individu. S'inspirant de concepts tels que les « objets frontières » et de la « communauté hybride » de Susan Star et de Michel Callon, je propose une méthodologie réflexive avec des outils pour cartographier, encadrer et façonner l'investigation éthique, dans le but d'éviter les erreurs et d'intégrer les valeurs dans la résolution de problèmes. Cette approche s'efforce de relier les réflexions méta-éthiques aux défis quotidiens de la bioéthique, en plaidant pour une méthodologie cohérente, réflexive et pragmatique.

Mots-clés
recherche immersive, communauté, réflexivité, intelligence artificielle, bioéthique globale, une seule santé, interdisciplinarité, méthodologies mixtes, approche écosystémique

Abstract
Exploring the complex landscape of bioethics, this article combines the theoretical insights of the Potterian Global Bio-Ethics approach with bioethics research methods, aiming for actionable ethical compromises in governance. The Potterian approach transcends traditional disciplinary boundaries, adopting John Dewey's pragmatist view, and bringing into convergence philosophical and empirical methods. I advocate for a synergy between micro-scale local-empirical and macro-scale global-rational approaches. Presenting a hands-on case for bioethicists, I emphasize a 'Global' bioethics perspective, grounded at the individual scale. Drawing on concepts like 'boundary-object' and 'hybrid community' from Susan Star and Michel Callon, I propose a reflexive methodology with tools for mapping, framing, and shaping ethical inquiries, to avoid fallacies and embed values in problem-solving. This approach strives to connect meta-ethical reflections with daily bioethical challenges, promoting a coherent, reflexive, and pragmatic methodology.

Keywords
immersive research, community, reflexivity, artificial intelligence, global bioethics, one health, interdisciplinarity, mixed-methodologies, ecosystem approach

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INTRODUCTION

In the field of bioethics, integrating theoretical frameworks with practical research is crucial to connecting abstract ethical concepts with tangible (real-life, *bio*) realities (1,2). Ole Moen (1), for instance, engages the reflection on the relevancy of scenarios to explore the boundaries, limits, and uncertainties of both premises and controversies experienced by individuals and collectives before these ideas are effectively turned into practice. However, a debate emerges in ethics about the degree of this more abstract conceptual turn (3) and empirically-focused investigation (3,4), which are in line with the perspective of *ethics by design* of technology adoption, experimentation, and science. Philip Brey (5) falls under this empirical turn of ethics in advocating for an 'anticipatory ethics' that meshes with the genesis of emerging technology, while Sabine Salloch and Frank Ursin (4) stretch this argument further, advocating for the use of digital technology in ethics data collection processes. According to Jonathan Ives and Heather Draper (2), these emerging empirical ethics involve new methodological arrangements, making all methods in the toolbox relative, at least at first glance. This philosophical vs. empirical prioritization debate is, in my view, missing a pivotal process: could we integrate reasoning without reducing the respective values of each mode of inquiry? Yet, we should remember that both forms of reasoning have a particular legacy, culture and institutional context, which do not easily mesh with the other. Further, there is the challenge of scaling this critical integration, from a research project to the broader institution process of translating science in policymaking.

Exploring these integrative and scaling aspects, this article builds on a recent publication in the journal *Global Bioethics* (6), which examined the synergy between Potterian Global Bioethics and empirical bioethics research. Van Rensselaer Potter's vision of global bioethics transcends traditional disciplinary boundaries, drawing as it does from a pragmatist tradition embodied in the work of Aldo Leopold – Potter entitled his second book *Building on Leopold Legacy* (7). Bryan Norton, who studied and advanced Leopold's philosophy, emphasizes this perspective's affinity with the founders of pragmatism, including Charles Pierce, James Wilson, and John Dewey. Norton evokes the interrelation between education, science and ethics that melds philosophical inquiry with the science-based experimentalism to effectively address ethical challenges (8). Yet, Potter's view is often reduced to a meta-ontological perspective, stuck between medicine and ecology. However, Potter (7) advocates for a

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ISSN 2561-4665

new ethics that goes beyond moral philosophy (*What is 'Good'?*) by engaging in *in situ* thinking instead of focusing on building meta-approaches (e.g., Utilitarianism, Deontologism, Virtue) that remain within academia. This gives another sense to philosophical translation, which classically used the path of conceiving a (mono-thematic) set of applied ethics, compartmentalizing them into medical, environmental, technological, political, etc., ethics. Potter turns our attention from meta to methods in order to identify ethical dilemmas in practice and find acceptable compromises with/for communities[1]. Thus, he engages the radical challenges of giving a voice to silent entities, e.g., vulnerable populations, endangered species, unemblematic landscapes.

In this article, I further elaborate an approach (6) that builds on the empirical bioethics methods explained by Richard Huxtable and Jonathan Ives (9), that is, a "pragmatic, interdisciplinary and reflexive bioethics" (10). Ives operationalizes this bioethics approach by using a "reflexive balancing" method that challenges the "reflective equilibrium" coined by John Rawls in *A Theory of Justice* (11), and commonly used in qualitative and appreciative research. Huxtable and Ives draw on an analogy from landscape management that is transferable to any project management process – Mapping, Framing, Shaping (9). Echoing the Potterian-Leopoldian pragmatism, I propose building a conceptual and practical toolbox that offers a suite of tools and a user guide for ethicists embedded in the field, thus aiding in the development of practical paths to unknot ethical dilemmas within governance frameworks, including resource allocation and policymaking in science. The paper in *Global Bioethics* (6) did not thoroughly explain how an ethicist could perform *reflexive balancing* when it is scaled-up to the 'global.' While the paper acknowledges the importance of worldwide-level initiatives, like those of the United Nations (6), it emphasizes starting at an individual scale to foster an embedded bioethics practice (12) and evolving within a global perspective (13). A balance is needed between localized, specific methods and a broader, rational framework, to reconcile decision-making and orientation-building with the realities of local communities and people's daily lives. To further pursue this explanation, in the present article I mobilize critical concepts like 'boundary-object' and 'hybrid community' from Susan Star (14) and Michel Callon (15), which are explained in sections bellow, to support a methodologically inclusive and pragmatically grounded bioethical discourse – see the 'Actor-Network Theory' (16) and 'Sociology of Translation' (17) frameworks.

The focus, here, is on governance that helps ethicists – and ultimately any concerned scientist or project manager – to ethically facilitate the crafting of functional initiatives, in particular when the project has the potential to orient societal changes or influence environmental organizations (2). This new focus can help professionals, decision-makers, organization managers, and even in-action researchers to address ethical dilemmas and develop compromise solutions, by adopting a posture of interconnectedness and an interdependency ethics of norm-building (18). Jonathan Beever and Nicolae Morar (19) explain this nuance between interconnectedness and interdependency as a networking process where beings and things interact directly or through indirect cascades of interactions. A scalable dynamic, these networks evolve under common pressures (e.g., resources) that influence the arrangement of the whole and the development trajectory of each of the parts. Interdependency involves, for instance, nesting research initiatives within the broader administrative habitat of science, designed at the government level or by mesoscale institutions across sectors that orient innovation development. Within the broad science habitat, deployed at the discipline level, we find several distinctive initiatives aiming to advance knowledge, education, and translation. However, to consciously animate this interconnectedness and interdependency, we need a set of facilitating actors that are enacted at the interpersonal level (20) and, engaged in a practical toolbox building to a make living ethics emerge (21). I thus integrate the contribution of Tineke Abma and colleagues (20) to this interpersonal, interrelational and interactive living (bio)ethics process, with an inter-ethics approach (i.e., not uniquely biomedical ethics or environmental ethics) that engages and embeds the ethicist in the field, at both the operative-technical and administrative-strategical levels. Finally, building on this inter-ethics perspective and following Éric Racine and colleagues (21), I propose a 'Living Ethics' to scale up the individual role of (professional) ethicists into a multidisciplinary team effort.

CASES STUDIED AND A LIVE EXPERIMENT

According to Leopold, Potter, and Norton, ethics must adopt an experimentalist approach. This includes the genesis of a well-conceived (empirical) hypothesis and, more broadly, conceptual thought experiments. Experimentalism means broadening a purely inductive vision, moving from the empirical to the intellectual in order to rationally explore the frame of the experience, i.e., its assumptions, limits, and uncertainties. Creating room for deductive exploration helps identify blind spots that could lead to influences, errors, biases, and fallacies within these experiments. Nevertheless, there is still a tendency to position ethicists outside this empirical experience or to only acknowledge their expertise retrospectively (22). They thus fall under deductive investigations but without having direct interactions within the experiment or the ability to provide live feedback on observations. These ethicists become outsiders or commentors, because they are not embedded within the research, so their expertise is downstream of knowledge genesis – they help participants, subjects, or objects to retrospectively assess the knowledge building process. But from this outsider's point of view, it is complicated to help participants become empowered to advance their interests or resist possible sources of oppression (23). Critiques of this deductivist view of ethics are not new (24), and bioethicists are still struggling to overcome this challenge, arguing that, like with their (inductive) involvement at the operational

[1] An ethical dilemma is a Cornelian choice, implying that you hold the power to act but cannot decide as all avenues are unjustifiable. In my publication in *Global Bioethics* with Williams-Jones (6), I argue that the daily (professional) job of ethicists is to develop these Cornelian decision architectures that consider value systems and scientific knowledge to balance justificatory alternatives. These involve prospective analyses, risk mitigation, the reduction of negative impacts, and responsibility sharing, which frequently leads to compromise solutions. In complement, the (professorial) job of ethics researchers involves extending methodological capacity by mobilizing philosophy and science to integrate beings with little or no voice, things, and places in society, community, and ecosystems. Ethicists have a 'translational' purpose in support these actors by making explicit their positions, negotiating postulates and deliberating on future relationships.

level in health systems (clinical ethics consultations), they should also be engaged upstream and embedded within the 'decision-making' processes of science, technology and research.

Over the past seven years, I have been involved in several initiatives as an ethics and governance expert providing advice on issues raised by data collection and use, surveillance, and metrology (measurement), mostly applied to interdisciplinary fields including One Health (integrating the human, animal, and environmental dimensions) and artificial intelligence. This began during my PhD, where, in thinking about the role of bioethics in science governance (23), I used an eco-ethnography methodology (6) of the laboratory – based on the work of Bruno Latour & Steeve Woolgar (24) and Michel Callon (15) – to study issues raised by data sharing to address antimicrobial resistance in the context of veterinary medicine and agricultural food production. Latour's contribution to my thinking, notably via his Actor-Network Theory, was to help me situate the researcher (an actor) as part of complex social networks that influence (epistemologically) the genesis of scientific facts. Callon's contribution, his sociology of translation, helped articulate the various techno-social-environmental pieces which, when assembled into a translation system, regulate the genesis of scientific facts, social norms, and citizen feedback. In contrast to Latour and Woolgar, who focused on a few Lab activities per inquiry, the 'Eco' in my projects points to the multi-site and multi-focus experience cycle conducted within/for various practical initiatives, each offering a piece of the broader Callonian translational system. In the end, this landscape helps unpack the conceptual puzzle of Potter's new global Bio-Ethics approach (Table 1). Using this perspective, the ethicist becomes a facilitatory, translational, and dialogical actor. Their task is to track and critically reflect on the interconnectivity and interdependencies that tie together *a priori* distant initiatives into a system. This ethical analysis necessarily encompasses the empirical, technological, sociological, intellectual and critical relationship within and between initiatives. It aims to foster the genesis of an ethics constructed in close dialectic with its application and feedback from experience (25).

Table 1. Distribution of the cases studied according to the Boudreau LeBlanc framework (6)

Cases studied		Assemblages
Mosaic of concerns for societal change and the justification system articulating the values guiding the initiative.	Empirical	1. A 6-year feasibility study conducted by the *Center of expertise for clinical research in animal health and welfare* mandated by the Québec *Ministère de l'Agriculture* to the *Faculty of Veterinary Medicine* at the Université de Montréal (UdeM, 2018-2023). 2. Initiation of a province-wide monitoring system of antimicrobial use in animal health and agriculture, which could eventually contribute to the antimicrobial (use/resistance/residue) surveillance across human, animal and environment in Québec, Canada and internationally. 3. Conceptualization phase and early dialogues emerged in a rich empirical context involving tangible actors (physical and moral persons), such as the *Canadian Integrated Program for Antimicrobial Resistance Surveillance* (CIPARS), *COnvergence in EVALuation frameworks for the evaluation of integrated surveillance systems for antimicrobial resistance* (coEVAL-AMR), *Global One Health Network* (G1HN), *Strategy for animal health and welfare in Québec*, *Attestra* and most of the Québec associations in animal health and production. 4. Proposition of an integrated surveillance of antimicrobials emerged in a vivid (quantitative, qualitative, reflexive) research context, which involved a large community of professors, academic/agency researchers, professionals, practitioners and students from the *Center for Public Health Research* (CReSP), *Research Group in Epidemiology of Zoonoses and Public Health* (GREZOSP) and the *One Health Research Group*.
Government projects to acquire new software solutions or drive technological projects (private-public-academic) to develop bigdata, AI and digital tools or environments.	Technological	1. Immersive opportunities within the Québec public sector (2018-2023), including the *National Institute for Excellence in Health and Social Services* (INESSS, 2018-2019) and the Center for Digital Excellence (CQEN) as well as the *Direction of the ethical framing of AI* at the *ministère de la Cybersécurité et du Numérique* (MCN, 2023-2024). 2. Initiation of an ethical process to support the development of governmental or technological AI projects, at the administration level. This required a method to govern, frame, and conduct the public sector program of emerging technology acquisition from the perspectives of the government and others funding facilitatory actors, such as the *Québec Research Funds* (FRQ), MITACS Canada or the *Institute of Data Valorization* (IVADO). 3. A science advisory position as Science Resident within/for IVADO (who provided doctoral and postdoctoral scholarships, 2020-2023, 2024-2026) and coordinator of the Ethics, Governance & Democracy branch of the *International Observatory on the Societal Impacts of AI and Digital Technologies* (OBVIA) provided me a rich social context to see in action governing actors from the inside-out, sometime as an external asset (with independence), and at other times as an insider asset (subject to oversight, and with certain clearances). 4. The idea of accelerating technological development and adoption in a practical setting requires both a dynamic research milieu, such as the Quebec AI Institute (MILA), IVADO, and CQEN (Cellule AI), and a communicative administrative milieu that facilitates understanding of practical, daily issues and broader prospective (theoretical) concerns.

The collective agency of AI adoption agenda in Quebec and social controversies over the consequent science, technology and societal changes.	**Sociological**	1. A 3-year (ongoing) initiative led by the OBVIA (2021), Forum IA Québec (2022), and *Centre de Reference in Agriculture and Agri-Food* (CRAAQ, 2023) with the help of several facilitatory and Government actors, such as IVADO and MAPAQ, that invests in community-building with training and discussion activities, allowing for understanding of actors' realities within their organizations, between peers, among/between sectors, towards or in retroaction with regulatory entities. 2. Initiation of a consensus-building strategy for data, AI and digital technology valorization and development in the Québec Agri-Food sector, based on a lively community of practice and the opportunity to 'walk' these vast sociological terrains of social problematization, debates and controversies on AI applied to the food chains from farm to fork. 3. A collective-based process emerged with the momentum of an already mobilized community, involving the still-growing set of actors (26), which include several enterprises and associations within the Agri-Food milieu (in animal production, vegetal production, bio-food processing and aquaculture & fisheries) and academic, private and public labs, engineering and expertise centers on data, AI and digital environment. 4. Building energized interdisciplinary, inter-sectorial, and international milieus for deeper deliberative and evaluative processes requires a strong collaborative inter-relation with research communities (OBVIA and IVADO), extensive discussions on the treatment and analysis of deliberations and negotiations, as well as ongoing studies of social methodologies for analysis and actions
The ontology and epistemology of interdisciplinarity, as in One Health, and the application of a pragmatic ethics.	**Intellectual**	1. A 5-year interdisciplinary PhD project conducted at the Public Health and Veterinary Schools of Université de Montréal, in the BioethX (experimental) Lab and One Health Research Lab, to revisit the premises and conduct of interdisciplinarity in order to facilitate its practice. 2. Innovating a new methodology in global bioethics, building on the ecosystemic approach and (eco-social) ecosystem analysis, to empirically and rationally investigate the concepts of Sustainability and One Health, and the correlative operationalization of pragmatic and transdisciplinary tools needed for real-world application. 3. A conceptual dialogical investigation was conducted with the support of rich intellectual environments that were used to having these sorts of philosophical debates, such as the *Center for Research in Ethics* (CRE) and the *Institute of Applied Ethics* (IDEA). 4. The conduct of deep dialogue necessitates opportunities to pursue conversations in diverse activities and events (symposiums, consensus-building forums, focus groups, interviews, unofficial/unstructured exchanges), and these were developed in collaboration with: One Health Initiative, One Health Student Club, IVADO Intersectorial Student Communities, OBVIA, IVADO grouping (Mental Health).
Immersing the ethicist in **an** interdisciplinary team in society and the community, empowered to self-govern.	**Critical**	1. A 7-year (ongoing) intensive introspective, self-reflexive, and autoethnography logbook in ecology, bioethics, and (One) health (academic)-related groups. 2. The (distributed) initiative of embedding researchers in inter-/trans- (post-normal) disciplinary units (teams, consortia, faculties, sectorial-activities, etc.). 3. This mainly self-reflexive inquiry requires an introspective rigor supported by creations (for me, it was textual narratives of all sorts) enabling the frequent changing of analytical lenses. 4. These reflections could only be sustained in stimulating milieu, emerging from a long-lasting immersion in participating, designing and animating discussion forums, workshops, and other activities on inter/transdisciplinarity, governance ethics, and norm genesis, conducted in partnership with, among others, the BioethX Lab and One Health Research Lab, UdeM One Health Initiative and Student Club.

* Sometimes, I held an active position (coordinator or researcher) in these initiatives; at other times, I was more an observer (science advisory) or collaborator. I was never the principal investigator, except in the terms of my doctoral thesis, science residency or postdoctoral research programs. Nonetheless, 'walking' this vast terrain allows me to "sketch here and there" the landscape (a nod to Leopold) and become a key informant to interconnect and seize opportunities.

FRAMEWORK

The essence of the 'Global' concept (as *globus*, 13) stresses the need for a reflexive framework based on experimentalism to ground global bioethics approaches. Here, global is not synonymous with worldwide (or *mondial* in French), even if in a narrow sense global could refer to a worldwide Earth organization. Instead, global refers to the multiscale relationship (interdependence) tying all parts of an organizational unit in a system and under a context (aka, ecosystem). In the Leopoldian pragmatist view, experimentalism involves a learning cycle logic that could address these interdependencies. However, such experimentalism entails an ongoing process that surpasses the one-off event of the 'test' (the single experiment or experience), enabling a scientific conclusion to be drawn based on trial-and-error speculation. Experimentalism implies syntheses (theoretical hybridization) to construct a robust hypothesis and a rigorously designed framework that paves the way for a sequence of experiments. Moreover, experimentalism entails self-awareness and critical reflexivity on the part of researchers and appreciation about the complex systemic and organizational contexts – a way of unpacking the monolithic, meta 'holism' concept – to properly frame their research findings within their specificities and so derive knowledge (from specialized to generalized), while always being clear about their assumptions (27).

Even if aiming for a *global thinking* (27), these pragmatist approaches still use scientific methodologies that value empirical observations, focusing on specificities and localities, as demonstrated in the conceptual works of Edgar Morin on Complexity. These observations are archived in literature reviews, conceptual analyses, and fieldwork knowledge, which gains a property of transferability and generalization through the process of synthesis. Indeed, local observations could outgrow their specificity, but only if its synthesis acknowledges the underlying premises and assumptions. However, all syntheses remain an open hypothesis for further comparative empirical and intellectual experiences. Focusing on synthesis involves an integration process and relativist stand on the criteria of truth as developed in the Latourian Actor-Network perspective. According to John Law, coherency should be considered as the prime criterion to value knowledge and balance hybridization in terms of syntheses (22).

Consequently, this pragmatist framework challenges the (strict) disposition of positivist vs constructivist inquiries, which I argue unduly narrow our investigation. This framework refocuses the researcher's attention on contextual awareness and environmental (re)shaping (*aménagement* in French) rather than on a targeted (positive or constructive) inquiry. At first glance, the research inquiry has a specific orientation, aiming for a particular object of study. However, its real struggle is contextualizing the findings within their relative assumptions. For instance, ethologists observe animal behaviours; ethnologists study peoples and cultures; and ethicists examine injustices, dilemmas, etc. But they all conduct a similar rational and reflexive investigation, focusing on outlining the right methods, measurement tools, tracking indicators, and so on, which engages (or should engage) the researcher in introspection, self-criticism, and critical thinking.

Ignoring the (ir)rationality behind observations leads to risks of several fallacies. In my paper with Williams-Jones (6), we highlighted the importance of Huxtable and Ives's three-step project management process and logic model of 'Mapping, Framing, Shaping' to counteract logical fallacies by integrating critical reflexivity and values into our understanding and shaping of the world (10), especially to overcome the naturalistic or positivistic fallacies. A norm should not be dictated solely based on descriptive knowledge, and this also applies to the statistical, computational or rational results that emerges from an experimental process. Mathematicians explain this in terms of Type I/II errors and emphasize the need to be aware of assumptions, sampling plans and metadata so scientists can critically reflect on conclusions and interpretations. Philosophers of science take this logic a step further by promoting a deep interdisciplinarity between disciplines. Beyond a superficial lens (among labs of proximal disciplines), such interdisciplinarity meshes researchers from very different scientific reasoning approaches (e.g., mathematicians), thematic knowledge (e.g., biologists), and sense-building disciplines (e.g., artists).

The bottom line is to improve our capacity for introspection and self-criticism as a collective unit of expertise. However, an interdisciplinarity team unit increases in size proportionally with the complexity of the issues to be addressed. For instance, the contemporary issues facing our planet involve a diversity of often conflicting analytical logics (quantitative, qualitative, reflexive, etc.), areas (natural, social, human), and groups (from South to North, East to West, native to migrant, oppressed to privileged experiences). To overcome these fallacies – the issues are always more complex than simply Us vs Them since they are intersecting – we should integrate values within the fact-building process to frame an *ought to be* vision of the future before actually shaping it, as explained in the post-normal logics coined by Silvio Funtowicz and Jerome Ravetz (29). The goal of the framework I present here is to empower leaders to adopt a knowledge-driving decision-making process (6,29,30). And this implies, in practice, that the research framing is not confined within the boundaries of a single project, (budgeted) program, (academic) discipline, (economic) sector, (local) community, etc.

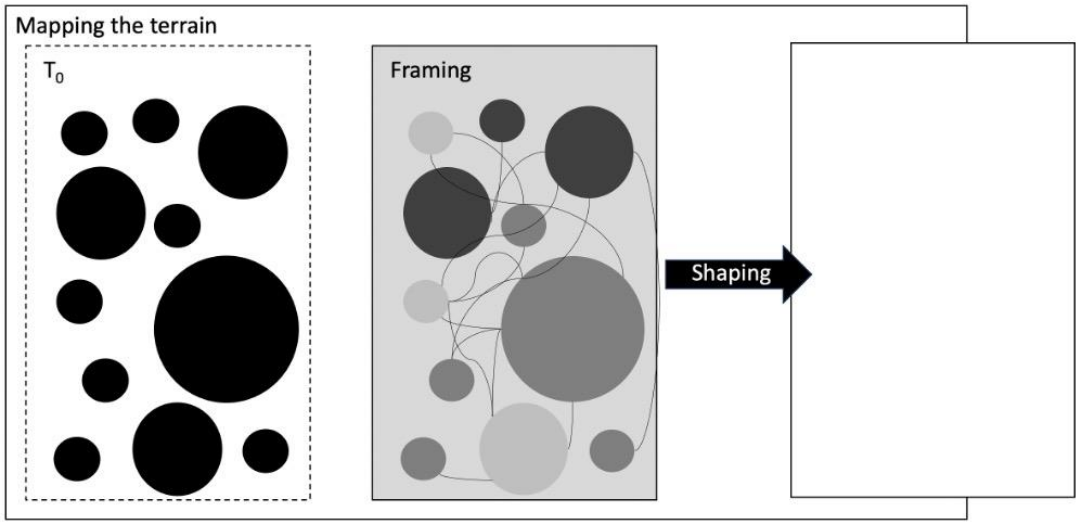
Building on the 'Ecosystem Approach to Global Bio-Ethics' (6), this framework focuses on the dynamic of joint labour (collaboration) or operation (cooperation) in a multisite, decentralized, interdisciplinary unit. Indeed, collaboration in research is the focus. Beyond partnership or contractual relationships, collaboration recalls the early days of nineteenth-century sociology, outlining the role of cultures as an unofficial form of power to explain social cohesion, coordination, and collective movements in society (e.g., social classes). In a paper with Cécile Aenishaenslin and Bryn Williams-Jones (31), we presented the added value of the Leopoldian concepts of 'co-operation' as a multisite operation design (laboratory, centre, institute, consortium, etc.), all evolving within the same coherent (eco) 'habitat' of norms (economy) and system influences (ecology). Capacity-building emerges from their cooperation, fostering the genesis of an ethic of governance which, in Leopold's vocabulary, corresponds to 'The Land Ethic' when globally applied to the social-ecological system relationship.

The present framework aims to situate researchers at the local-global intersection (6), thus proposing a Global approach to a localized living ethics.

Mapping

Figure 1 illustrates the necessity of *mapping* that goes beyond literature reviews. Thinking outside of the box in the scientific community is a rising concern, especially in fields derived historically from rational disciplines. Indeed, the current organization of knowledge might be unhelpful, insights can be misleading, and discourses can be fallacious. Gilles Birchley and Jonathan Ives (32) associate such an approach with disciplines engaged with critical theory, such as bioethics. Here, mapping points instead towards the contextualization of a study. Without lowering the value of synthesis that emerge from literature review (as explained earlier), ethicists have the job to contextualize the 'targeted' initiative within a broader framework of human knowledge and societal opportunities.

Figure 1. Locating the Terrain of and Path towards an Ecosystemic Bioethics



This could mean the initiative (project) hiring an ethicist to be part of the team, or regularly talking about the initiative with an ethicist interest in the topic or who otherwise feels affiliated. Within those initiatives (Table 1), the ethicist's task is to both raise awareness about 1) the broader context, including actors, resources, perspectives, concerns, and 2) knowledge emerging from understanding these situations, assumptions, oppressions, etc. Adding this new force of contextualization to an interdisciplinarity team increases the capacity to recruit new allies and sustain constructive partnerships that energize the network and fosters the emergence of resources, innovations, and opportunities. Moreover, operating with an ethics lens can refine the initiative's ability to identify and prevent potential risks, anticipate obstacles and mitigate the impacts of conflicts of interest, misconduct, erosion of trust, and so on. And it provides the necessary adaptive agility to instil a dynamic of critical thinking and dialogue within and between initiatives, which is what I will be developing in this framework.

This critical thinking and dialogue start with an awareness of our philosophical premises, privileges, and standpoints, and a move beyond traditional ethical frameworks to include environmental, feminist, and ecologist perspectives. It means contextualizing the case study, the object of study, and the subjects in the study, but also the subjective interests of the observers, teams, (inter)disciplines, sectors and/or institutions (Figure 1 Dot Line), all within a much broader context that brings to the fore the inner processes of knowledge production and allocation (Figure 1 Full Lines). The full terrain is inaccessible in its entirety, but this landscape is discoverable through investigation and connection between emerging multisite initiatives (Figure 1 Bubbles). In complement, however, Table 1 (above) outlines a classification – empirical, technological, sociological, intellectual, and critical dimensions – that helps discover the inner process of knowledge process and resource allocation, which leads us to Potter's (33) advice about building "knowledge of how to use knowledge."

A cartographic classification helps to increase capabilities over the boundaries of political jurisdictions (*a fortiori* the budget) and metrological assumptions (e.g., human vs animal health). For instance, beyond the practical aims of a monitoring network set in animal health (Table 1), there is the broader One Health goal of antimicrobial use surveillance and improving pharmaceutical conception, production, and waste management. Suppose that the direct empirical connection is blocked due to complications in the political jurisdiction. In this case, One Health could still bridge those two sides (human vs animal) by sharing the (meta) learnings emerging from the technological, sociological, and intellectual dimensions that sustain these (politically) distinct areas. Table 1 outlines the technological initiatives of AI research, development, and adoption within the public administration, which could contribute to this first empirical case if acknowledged in the broader (sociological) picture of the administrative programming of science, technology, and innovation with regards to a region's (Québec) economic sectors (including the pharmaceutical and bio-food industry).

In practice, ethicists have to contextualize perspectives within pre-existing theoretical frameworks and outline the novelty of A) the specific perspectives used in B) a local situation within C) a particular environment and under D) a subjective context. This contextualization goes beyond the classic approaches to ethics, such as deontology, utilitarianism or virtue. It involves positioning in the world (premises, privileges and standpoints). Due to the current attention to issues raised by climate change, environmental ethics has been recognized for its contributions to reflections on positioning (or *ego*) or 'centrism' – anthropocentrism, biocentrism, ecocentrism, eco-acentrism, etc. Using Leopold's words, this vocabulary would come as a question about *Who is part of your community?* The answer is, our peers, living in a shared environment and subject to a common (op)pressure. To describe such positioning, ego, and centrism, we need introspective technics and self-criticism of our premises, assumptions, standpoints, and beliefs about *What is true?*, *Who determines what is true?*, and *What are the criteria of truthfulness?*

Consequently, the ethicist's mapping role shifts from a descriptive or appreciative position, confined within the walls of academia, towards a proactive role in society. This transdisciplinary shift involves, in Potter's work, advising on the

consolidation of a new (inter)discipline – which he called a 'Science of Survival' – that operates at the intersection of science, humanities, and communities to engage in 'bridge-building' and develop 'knowledge of how to use knowledge.' Instead of advancing specialized knowledge by diving into a category (e.g., by dimension, centrism, or project; see Table 1), the global bioethics exercise emerges at their intersection, sketching 'paths,' 'bridges,' 'courses of action,' 'boundary-objects,' or 'obligatory points of passage', vocabulary borrowed from the different theoretical grounds but referring to the same idea of surpassing intersection.

In this argument, I want to stress that neither the curriculum of ethics nor biology alone can open the way to translation between facts, values, norms and the daily experiences of life. We need to focus our thinking on methodologies, especially in mapping the connecting points of passage between methods, to assemble hybrid (mixed-methods) packages that could change behaviours up to policymaking and cultures.

Framing

Figure 1 also depicts framing in action. At the beginning (without frame), we see a chaotic, disordered, unconnected world, as Potter outlines in his first publication on ethics (22), and which is then developed in the work of Morin (34). But we could shift this *a priori* perception to an ordered system with known connections. Empirical methods allow this shift by delineating the conceptual landscape and modelling its inner interactions, using science and philosophy to 'geographize' the understanding of this terrain. These methods benefit from building on literature reviews, which taxonomize large variations in function of aims and of the reflexive degree of liberty, as Jordan Parsons and Harleen Johal (35) outline, which must be considered if we transit from mapping to framing. However, they require more immersive and comprehensive approaches, such as ethnography and ethology, which embed the researcher within the social and the ecological.

Yet, our goal in ethics is not merely to describe the current state and negotiate known laws, principles, and observations. These descriptive activities would be part of the framing process of science (the interdisciplinarity within the Figure 1 mid-sub-box). The task involves, instead, setting the terrain for a well-designed 'experiment' (Figure 1 mid-sub-box's frame) to envisioning a better future (Figure 1 right-sub-box). In terms of experiment, I acknowledge, here, a conceptual and empirical hybrid. The purpose is to identify intermediaries (16) and leverage points of passage (36) to make a path that could shape this better future from the first state describe by the framing process of science (6). The actual world (mid-sub-box) is not the targeted study object of ethics. Instead, it is the arrow pointing towards the fuzzier one emerging *outside-of-the-box*. The conception of this abstract box required a rigorous documentation of the critical reflexivity process (e.g., reflexive balancing) joining together the living experience (left), its empirical analysis (mid) and a constructive appreciation of it (right). In practice, this means investing, indeed, in the resolution of empirical issues (e.g., antimicrobial use, Table 1) but also allowing time for recruiting allies (e.g., the technological, sociological and intellectual allies) and diving into a process of self- and contextual critical reflexivity.

It's hard to recruit allies in real life. Yet these allies will determine our ability to shape a possible future. Furthermore, we can frame the situation through their perspective, especially when they expand the perspective on the empirical case from a narrow focus to a broader contextual dimension (e.g., technological, sociological, anthropological and critical, Table 1). For this reason, I advocate a proactive role for the ethicist, who invests themself in the landscape, contextualizing the specific case. On the one hand, the ethicist builds on this "walk in the landscape" to frame the situation of the empirical case to which they provide their ethics expertise, and which involves intellectual and critical activities in science consortia or in immersive settings. On the other, the ethicist goes in search of allies which necessitates technological and sociological initiatives. This means that ethicists should devote themselves to multiple projects at once because their actions, knowledge and practical wisdom benefit from pooling, linking and framing initiatives together in the broader empirical-tech-socio-intellect-critical space (Table 1).

This sort of ethics framing leads to a change, a reshaping (Figure 1). This abstract appreciation helps in the framing of applied, tangible courses of action, following a directional orientation (arrow, Figure 1). These paths involve individual conduct, up to populational modes of regulation and association, such as policies, economies, or other abstract constructs, delving into the technological, sociological, and intellectual dimensions. Here, I emphasize the value of methods as highly documented, actionable processes that could be systematized widely and criticized within/across cultures and generations. In the *Canadian Journal of Bioethics*, I previously situated these methods as a landscaping and a management (or an *aménagement* in French) process of dimensional estates between ethics (critical) and biology (empirical, Table 1) (37). Methods are valuable tools to translate theory into practice, leading us to Callon's sociology of translation and Latour's actor-network theory. And it might be opportune to open up a methodological space to think about hybridization (i.e., mixed-research methods, methodologies, epistemology), a comparative science that aims to build a set of "objects at the boundary of several perspectives and realities" (aka 'boundary-objects', 14) or, as emphasized in Potter's work, "a knowledge on how to use knowledge."

Ultimately, this methodological framing should lead to packaged, portable, and transferable knowledge (a tool). Experimentally, these tools should become the basic genesis and progression unit for governance. For Brian Erp and colleagues (38), such a *bioxphi* or 'experimental philosophical bioethics' is needed "to interrogate the concepts, intuitions, reasoning, implicit mental processes, and empirical assumptions" underpinning science governance. According to Derk Loorbach (39), since governance it is in constant relation with *mind-social-ecological* environments, it should evolve through a 'transition management' that instills an ongoing progression as part organizational resiliency and environmental capacity. It is this specific crafting that leads to the last phase.

Shaping

Shaping ethical landscapes requires indirect influence, akin to an advisory council, as I explain in *Humanities & Social Sciences Communications* (40). However, if not directly influencing decision-making, this advisory process should be part of a dynamic governance process. Responsively transforming practices and norms should not be precipitated but rather involve sustainable, systemic processes that facilitate collective engagement with complexity (41). Thus, when shaping, I refer to these governance dynamics. The governance design should include by default ethics, science, and community knowledge as a broad social advisory council or 'hybrid forum' as called by Michel Callon (41). Then, the shaping becomes indirect, since it is this tripartite advisory agency that shapes other innovative paths. The shaping also involves crafting tools – and not the world directly – which could be a method applied to a particular governance setting, a specific topic to govern, a local management leader's perspective, and so on. The tool's purpose is to enable a shift from existing conditions to an envisioned better future, employing a process of critical self-reflexivity, as I emphasized in *SN Social Sciences* (25). And these tools must come from the critical dimension (Table 1), having undergone the test of empirical experience, the multi-dimensional tests and the dialogical introspective test, adopting various critical positions on the reshaping proposal, as outlined in the last line of Table 1.

The goal is not to dictate the proper use for a particular purpose, as if it is a hammer and every problem a nail. Instead, the ethicist's goal is to arrange a space (in French: 'aménager') for continuously critically discussing this use within a particular governance setting, in light of academic and societal insights (37), echoing Potter's (30) and Callon's (42) emphasis on collaborative, interdisciplinary spaces. For example, Callon's concepts of hybrid forums/communities that are contextualized 'boundary objects' – an intellectual space – within the social-ecological area. Such forums and communities are envisioned as networks where laypersons and experts converge as well as human and non-human entities, shaping commonly shared knowledge and thus fostering empowerment, self-governance, and sustainable change. Acknowledging Law's thesis on the need for methods arrangement (28), ethicists should embrace this role of shaping the proper 1) value, criterion and metrics, 2) object, boundaries and translation, and 3) structure, functioning and purpose of the community to evaluate such an arrangement (40), which forces the ethicist to step back and acknowledge, respectively, the anthropological, sociological, and technological milieu surrounding the empirical case under investigation.

Consequently, shaping is not about simply drafting a white paper of the future (Figure 1 right-sub-box). This nuance earned Potter (30) several erroneous criticisms when he published "Toward More Vivid Utopias" in *Global Bioethics*, because the 'utopia' to be built is not this vision of the future, but the process for getting there – the "Bridge to the future" (33). This more nuanced understanding becomes evident in light of the Kuhnian paradigm genesis and revolution that Potter was referring to in 1970. Indeed, after arranging the 'bridge' (the arrow in Figure 1) and packaging it in a method for further rigorous criticism about its crafting process (28), the 'white paper' of the future is sketched collectively. And we can add, as Leopold and Potter acknowledged, that these become "sketches here and there" of/with/for the social-ecological community.

According to Potter, ethicists such as Leopold play a pivotal role in this context, grounding the abstract methodologies in practical terrain and facilitating dialogues that bridge theoretical knowledge with actionable insights. Their work extends beyond academia since they trace the process of genesis and impacts of science through the spheres of technology, policy, and societal norms, while also considering the dynamics of power, identity, marginalization, epistemic violence, and so on. Ultimately, the ethicist's role is to make ethics alive, echoing the embedded, pragmatic, and reflexive intention developed by Éric Racine and colleagues (21) who's goal was to scale up a dialogical inter-ethics at the facilitatory level of multi-disciplinary health professional teams working for the patient, within a broader organizational and societal vortex of confounding, influencing and pressing factors.

Further, the iterative interaction of these methodological and agency hybrids across different settings and contexts – like research consortia engaging in an international dialogue – enhances the robustness of the process and the quality of its documentation. Such cross-contextual translations and comparisons allow for a nuanced understanding of ethics in action, especially if one compares the shaping of an ethical governance process – or, as Potter put it, "a knowledge of how to use knowledge." This dialogical and comparative approach underscores the significance of boundary objects (14,43) as tools for collaborative construction and dialogue in ethics, fostering a global, interconnected ethical discourse that transcends local limitations and embraces a broader vision for ethical practice in global health and beyond.

APPLYING THE FRAMEWORK

This framework outlines a pathway for bioethics that blends translational pragmatism with an experimentalist ethos, connecting broad ethical reflections with tangible, localized actions. It sheds some light on a step-by-step approach to conducting conceptual research *To Think Global*, while being embedded in practice *To Act Local*. Emphasizing reflexive balancing and critical engagement, the aim is to integrate translational and experimentalist perspectives and foster an ethics that is pragmatically grounded and action-oriented (25). This view avoids several fallacies outlined by Potter that tend to push bioethics discourse 'out-of-this-world' in a time when we are in great need of bioethics being focused on the lived realities of beings and ecosystems (22,30).

Mandates tend to compartmentalize initiatives and create hermetically-sealed projects. This compartmentalization is sometimes a good thing (epistemologically) when the projected objects are distinct. However, it often reduces the value of general knowledge and, above all, limits the transferability of scientific knowledge and learning between initiatives. In contrast,

if the initiative is well-documented and contextualized, the transferability potential of a knowledge product can be studied. Such a study goes beyond documenting the sampling plan. It involves conceptualizing the qualitative mosaic of concerns, value systems, and justificatory architecture among the stakeholder collective arrangement (Table 1). This includes understanding, in the case of biosurveillance for example, data mutualization, software interoperability, emerging information processing techniques such as AI algorithms, and interpretation, visualization, and communication biases and learning. Beyond the technological dimension, it implies tracking the agenda of the consensus-building process within the stakeholder collective and raising awareness of broader social controversies which, in example presented in Table 1, involved health, biosurveillance, AI emergence, and the politico-economic targets and effects of change. Diving into these controversies, we also need philosophy-based dialogical exchanges and reflexive reasoning to understand premises and shed light on competing or complementary knowledge organization architecture among all parts of the stakeholder arrangement. But as argued above, philosophy-based investigation cannot be conducted *out of the world*, in the in vitro glass bell of a few university classrooms or hermetically-sealed thought experiments – it must be conducted in immersive and in-action settings.

However, budgets tend to compartmentalize initiatives in their narrow empirical circle of existence. For instance, the first case in Table 1 tended to reductively segregate animal health (veterinarian) from agriculture (agronomist), and both from human health, since they all fall under different political jurisdiction or economic sectors in Québec. The compartmentalization of science fosters the genesis of knowledge to some extent – applied knowledge, technical understandings and technologies. Transferable knowledge, however, requires a process of knowledge production that, by design, raises awareness of the context in order to outline assumptions and relative uncertainty (in its broadest sense). This implies acknowledging the similarities in the use of technologies and involvement in comparative sociologies, ontologies and axiologies. This means recognizing that (empirically) different collective units, for instance, stakeholders of veterinary and human biomedicine and public health, could share a common socio-political structure or culture that expresses itself under comparable regimes and sharable deliberative mechanisms. In the end, these comparative sciences could shed light on shared facilitators (bodies and processes) within the local milieu where the initiatives are deployed. For instance, since it was a stakeholder within multiple initiative (eco)systems, the *International Observatory on the Societal Impacts of AI and Digital Technology* (OBVIA) became such a facilitatory body for knowledge transfer and the recruitment of allies within the initiatives listed in Table 1.

A next step is to generate a structure that can immerse, transfer and study these empirical-tech-socio-intellect-critical processes, as I developed in the *Canadian Journal of Bioethics* on (a)managing the environment by contextualizing initiatives (37). In 2023-2024, I ideated with colleagues (Valentin Kravtchenko, Virginie Manus, Josianne Barrette-Moran, Georges-Philippe Gadoury-Sansfaçon and Sonya Anvar) a bioethics Coop – the Cooperative Idoine – at the intersection of service and research. Its research program is administered and operated differently from conventional processes, since its object of study is the experience of *transdisciplinar-ing* academic services toward society. It espouses the logic of a *Living Laboratory* with community-immersed action-research. Its innovation is to offer academic expertise to society (Science4Society) by valorizing many of the invisible skills (e.g., knowledge mediation and translation) of institutional members (i.e., graduate students, the professoriate) and stakeholders. This Living Lab Coop aims to help bio-ethicists[2] to transcend the dimensions that have given disciplines and universities their boundaries (Table 1). Its strength lies in placing the ethicist – or any other concerned expert – at the precise intersection between the local and global, allowing tools, procedures and methods to emerge from diverse projects that can then be transferred from one case to another. Furthermore, this logic also offers a much-appreciated crossroads for communication within society, by providing an actor that is independent of the political administration of our societies (corporations and government), one who can network the various initiatives according to their connection – on empirical and rational levels – and consider their respective resources, interests and mission.

AWARENESS

The framework presented above is anchored in critiques of three prevalent missteps in bioethics, and so is a means to advocate explicitly for a more grounded and methodologically sound bioethics practice.

Firstly, bioethics strongly interacts with empirical data-driven sciences and normative ethics analysis (2,38,44,45). However, it can succumb to an overreliance on scientific methodologies (32,46), rushing to empirical investigations (47) without thoroughly examining the methods, policies, and cultural contexts at play (3), or even the bioethicist's own biases (48) and their institution of affiliation positioning (49,50). They may go too quickly into the field without first mapping the terrain. This approach inadvertently mirrors the oversight that bioethics aims to correct: to gain contextual awareness (51). Between experimentation and conceptualization, Potter (7) emphasizes that a new generation of ethicists – which he calls bioethicists – could bring a translational expertise to the field, connecting the light of empirical and rational sciences with the humanities.

Secondly, bioethicists are sometimes overly influenced by legal and political perspectives, such that their normative analysis tends to frame preexisting rights, values, standards, and so on, before embracing a broader view of the situation. They then reduce the translational expertise emphasized by Potter as being at the core of their practice. Instead, bioethicists should prepare the settings for an extended framing exercise, exploring their own limits, assumptions, and premises to then conceptualize the boundary of this frame, contextualized within a broader mapped landscape (Figure 1). Embedded in a

[2] As argued in several previous papers about the '-' (37,40), I strongly recommend the bioethics/ethics communities become even more inclusive and acknowledge all concerned experts or citizens in the future that engage in constructive dialogue with peers, framed by a disposition for rigorous investigation.

collective, they should question, for instance, why these frames were struggling (let's say ethically) to be implemented properly in the first place. Within government agencies, for example, ethicists have a role in bringing to light the complexity of specific dilemmas, the (op)pressure on certain people to decipher (and their moral distress), the initial conditions of specific shared or distinct resources, premises, issues, and so on.

Thirdly, the ambition of some bioethics handbooks and bioethicists to reshape the world, while noble, often overreaches the practical scope of bioethics or any applied ethics, since no compartmentalized lens (a discipline, an institution, a person) has the capacity to see the World (33). Potter instead advises constructing 'bridges' rather than proposing futures, promoting connectivity and resilience over prescriptive ethics. As experts or concerned citizens, we should build connections, not the future. This Potterian understanding of prospectivity in ethics contrasts with the call for 'anticipatory ethics' (5) and governance (52), but without a profound disagreement, since Potter would rather focus on the *methods of becoming anticipatory* instead of punctually *depicting a valid scenario of the future*. This strategy is more realistic since the world is systemic and in constant transformation. Moreover, this view avoids the prescriptive pitfalls of 'stewardship' and 'control' critiqued in the Leopoldian environmental ethics, advocating instead for an investigative – more comprehensive, adaptive, reflexive – bridge-building approach in bioethics that is conducted per community. Let the future emerge from connectedness and resilience in bridging ideas and collectives.

While the mainstream principle-based approach of bioethics (i.e., principlism) has succeeded in translating broad philosophical concepts into principles – from utilitarianism and Kantian deontology to autonomy, beneficence, non-maleficence and justice – it remains tethered to four overarching concepts (as Potter outlined in his work, under the label of a 'Bioethics Creed'). The strength of principle-based approaches is that they are packable and portable, which eases their transferability and application to several cases and contexts and becomes a great avenue to mesh ethics with the more experimental lens of science-based disciplines. Recognizing this utility, I advocate for a shift towards developing a robust bioethical methodology that provides practical tools for ethicists to effectively engage with and influence the real world. For instance, this was the focus of the coPRIMOV (Position, Role, Interest, Mission, Observation, Valeur) bioethics tools (53), where Williams-Jones and I advance a conceptualization of conflict of interest research and management to provide professionals an introspective-reflexive way to build their critical positioning, engage in debates (up to social controversies), deepen their understanding of one another's positions, and ease the theorization of consensual 'points of passage.' Bioethics textbooks should focus more on the methodology of bioethics – the *how to connect and bridge* – rather than the bio-socio-anthropological themes that depict *how the world is not ethical*. These methodologies should present analytic and practical tools to help ethicists immerse themselves in the world and foster constructive leadership around them, notably regarding critical collaboration, adaptability and reflexivity. Nonetheless, this approach should not isolate bioethics within a specific methodology but rather enhance its applicability in practice, among others, with technology, policy, health and environment through interdisciplinary collaboration and a toolbox that critiques and refines the use of various methods.

In short, bioethics and these new kinds of ethicists should build their methods by helping others establish their inter-/transdisciplinary methodological systems. And they should test their resulting ethics' methods, toolbox, and influence.

> The problems of biomedicine [and their methodologies] have provided both interesting and difficult material to test the proposition that moral philosophy [and their methodologies] could […] have something to say about human life [and their ways to behave]. In that sense, not only is medicine itself [and their methodologies] being tested by ethics, but ethics itself [and their methodologies] is being tested by medicine (54, p.1229).
>
> And, we might add, ethics itself [and their methodologies] is being tested by ecological, population, and pollution crises all over the world. (55, p.162)

CONCLUSION

This article delineates a structured, reflexive balancing approach that effectively bridges the gap between theoretical and practical challenges faced by bioethicists. By integrating the translational and abductive elements of pragmatism with the reflective and critical depth of ethics, I propose a methodology that roots ethics discourses firmly in the real-world experiences of diverse entities within interconnected ecosystems. This methodological fusion not only deepens our comprehension of ethics approaches but also offers a pragmatic guide for bioethicists, encouraging them to weave together theoretical insights and empirical observations. This exploration contributes to the broader bioethical conversation, advocating for a synthesis of theory and practice that addresses global challenges while remaining sensitive to local contexts and individual experiences. Focusing on this integrative approach, I aim to provide actionable guidance for bioethicists, enabling them to navigate complex ethical landscapes with a balanced, grounded perspective. This endeavour aspires to enrich the global discourse in bioethics, fostering a more relatable, applicable, and universally resonant practice that resonates across varied practical, cultural, and ecological milieus. Ultimately, this article underscores the necessity for a bioethical praxis that is both thoughtfully considered and acutely aware of the practical implications of ethical deliberations and science paradigms. By championing a methodology that marries abstract ethical considerations with tangible real-world applications, I present a bioethics that is both intellectually robust and pragmatically valuable, ready to address the ethical quandaries of our time with clarity, compassion, and contextual sensitivity.

Reçu/Received: 08/04/2024

Publié/Published: 2/12/2024

Remerciements

Cet article a été écrit lors d'une immersion dans le laboratoire SPARK à l'Université Simon Fraser en Colombie Britannique, Canada, en tant que chercheur associé en bioéthique, employé à travailler sur un projet national américain en intelligence artificielle. Un remerciement particulier à Jean-Christophe Belisle-Pipon et Vardit Ravitsky, et à tous les membres du laboratoire pour les riches conversations sur l'éthique, la santé et les méthodologies, ainsi qu'aux membres du consortium *Cell Map to AI* (programme américain Bridge2AI) qui ont croisé mon chemin pendant que j'écrivais ces lignes et qui en ont influencé l'aspect pratique. Un remerciement similaire est dû aux équipes de Darine Ameyed et Martin Soucy du *ministère de la Cybersécurité et du Numérique*, puisque j'ai finalisé ces lignes en leur sein et dans le cadre de riches discussions opérationnelles, notamment en interaction avec Martial Kiemde, alors que j'effectuais une résidence scientifique postdoctorale d'une durée d'un an. Ce travail conceptuel fait cependant partie d'un processus plus large qui a commencé pendant ma thèse de doctorat; un remerciement spécial à Bryn Williams-Jones et Cécile Aenishaenslin. J'ai bénéficié de plusieurs opportunités d'immersion et de perspectives pratiques de la part de professionnels en éthique travaillant dans les institutions de santé québécoise (y compris Isabelle Ganache et Catherine Olivier) et dans la santé publique, l'agriculture et la cybersécurité; un remerciement spécial à Luc DesCôteaux, Cécile Ferrouillet et Émile Bouchard. L'engagement immersif est toujours en cours dans le cadre d'un hub d'activités imaginé avec les collègues, à l'origine de la Coopérative Idoine, à savoir Valentin Kravtchenko, Virgin Manus, Josianne Barrette-Moran, Georges-Philippe Gadoury-Sansfaçon et Sonya Anvar.

Acknowledgements

This article was written during immersion in the SPARK laboratory at Simon Fraser University in British Columbia, Canada, as a research associate in bioethics, working on a US national project in artificial intelligence. A special thanks to Jean-Christophe Belisle-Pipon and Vardit Ravitsky, and all the members of the laboratory for rich conversations on ethics, health and methodologies, as well as the members of the *Cell Map to AI* consortium (the US Bridge2AI program) who crossed my path while I was writing these lines and who influenced their practicality. A similar thanks is due to Darine Ameyed and Martin Soucy teams at the *Ministère de la Cybersécurité et du Numérique*, since I finalized these lines in their midst and under rich operational discussions, notably in interaction with Martial Kiemde, while I was conducting a 1-year Postdoctoral Science Residency. This conceptual work is, however, part of a wider process that began during my PhD thesis; a special thanks to Bryn Williams-Jones and Cécile Aenishaenslin. I received several immersive opportunities and practical insights from ethics professionals working in Québec health institutions (including Isabelle Ganache and Catherine Olivier) and in public health, agriculture and cybersecurity; a special thanks to Luc DesCôteaux, Cécile Ferrouillet and Émile Bouchard. The immersive engagement is still running now under a hub ideated with colleagues, part of the Coop Idoine, namely Valentin Kravtchenko, Virginie Manus, Josianne Barrette-Moran, Georges-Philippe Gadoury-Sansfaçon and Sonya Anvar.

Conflits d'intérêts

Antoine Boudreau LeBlanc est éditeur pour la *Revue canadienne de bioéthique*. Il n'a participé à aucun moment à la révision ou à l'acceptation de ce manuscrit.

Conflicts of Interest

Antoine Boudreau LeBlanc is an editor at the *Canadian Journal of Bioethics*. He was not involved at any time in the review or acceptance of this manuscript.

Édition/Editors: Aliya Affdal

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