

THE SOCIAL LIFE OF STANDARDS

Ethnographic Methods for Local Engagement

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Introduction

JANICE E. GRAHAM, CHRISTINA HOLMES,
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What happens when uncomfortable standards, made by and often for others, threaten the well-being and livelihoods of those people the standards are applied to and the communities in which they live? This volume brings to the reader's attention the politics and ethics of standards within a wide range of communities and contexts. Standards are not measures in and of themselves but, rather, stand in for and represent values and qualities of things that matter. While seen as essential in advancing science, technology, and society, too-careful adherence to a standard can prevent progress. A standard may be unresponsive to practical issues that arise, and it may damage or otherwise disrupt communities, demanding attention. This book explores how different communities make, subvert, contest, and reassemble standards, bringing them home in a wide range of situations and circumstances. We ask: What counts for standards, as valuations for things that matter, when they articulate in time and space and must respond to location and other contingencies? Previous work in science and technology studies (STS) on the risks and regulation of emerging biotechnologies had sensitized anthropologists Janice Graham and Christina Holmes to real-world issues that disrupt the best-made intentions of scientific and regulatory standards.

Although anthropologist Regna Darnell's longitudinal fieldwork among Indigenous peoples might seem disconnected from the bench, clinical, and regulatory science of the emerging biotechnologies that Graham, Holmes,

and McDonald studied, she engaged discussions over how standards play out in relation to Indigenous communities. Standards imposed on Indigenous communities by those in positions of greater power have a profound impact on the lives of those communities. That acknowledgment, emphasized in this volume, critically underlines the importance of studying standards far beyond the high-tech settings in which they have drawn the most attention from STS and anthropology.

Looking beyond anthropology, Fiona McDonald provided us with a legal scholar's counterpoint from which to both reflect on and examine the instruments that can be used to regulate, including how law, ethics, policies, regulations, standards, and guidelines intersect with political, social, and economic factors and how their legitimacy as instruments is determined. Together, we wondered about who makes those standards and for what reason. How do standards go on to articulate in the world with real people over time? And, importantly, who benefits (and who is harmed) by them? We realized that no single approach could capture the complexity of standards in practice. Situated in Faculties of Medicine, Health, Law, and Social Science, our research team was already interdisciplinary, with anthropological skills that facilitated the convergence of methods, subject matters, and theoretical frameworks. We were committed from the outset to using case studies as a tool to explore in detail the local contexts that affect standards within a comparative framework.

In traditional anthropological fieldwork, in communities, laboratories, classrooms, boardrooms, and the courts of nation-states, uncomfortable standards demand responses every day, often by the marginalized and vulnerable who are involved in ethical, political, and legal engagements where the stakes are particularly high for those experiencing precarious livelihoods. Focused on the making of standards in seeds, science, and medicine (Holmes and Graham 2009; Holmes et al. 2010; McDonald 2017; McDonald et al. 2019; Horst, McDonald, and Hutmacher 2019; Graham et al. 1996; Graham et al. 2012; Mishra and Graham 2012; Graham 2016a, 2019), and in a First Nations community located downriver from a petrochemical oil refinery (Darnell 2018), we understood that our own research barely scratched the surface of the complexity of standards in practice across time and locations. We invited other social scientists to join us in Halifax on the east coast of Canada for a workshop to explore the broader dimensions of the making of standards writ large. Contributors were asked to present their research on how individuals, communities, and institutions create and contest standards; how standardization processes are engaged by wider publics; and how

standards are made legitimate and who has the resources, authority, and expertise to make them so. Taken together, the selected papers from the workshop presented here reveal a complex suite of contexts and relations that, for all their diversity, produce a coherent processual approach to the dynamism inherent in the concept of standards. Each chapter provides evidence that, although standards are designed to be stable and universal, when put to use, their value and contribution to moving forward, to innovation, come from being responsive to local contingencies. And that takes time.

In these accounts, standards proved to be not rigid categories but evolving, living systems of relations that extended far beyond their immediate contexts of production to be distributed and circulated in wider communities. Unintended consequences often required further debate and negotiation. Our contributors considered how conflicts of interest and bias are absorbed or abolished in the making, tearing down, and remaking of standards. We heard about social justice and community engagement as different sides of the same coin, and we pondered the extent to which these values might be cynically adopted as insincere photo ops for deliberative democratic “involvement” instead of normalized as genuine material practices to enable trustworthy, open engagements that advance a common set of principles and guidelines in the process of standardization (Graham and Jones 2016). As we heard about how relationships of trust configure the negotiation of standards, we learned that there was seldom a *fait accompli* in any case (McDonald et al. 2019; Ryan, Giles-Vernick, and Graham 2019). How are standards that are created through international harmonization efforts affected by the contexts in which they are put to use in individual and community best practices? How do standards convey stability yet respond effectively to environments of innovation, development, and constant change? What critical incidents are brought about by the execution or by the breaches of standards? Who do they protect and who do they harm?

As researchers concerned about social-moral worlds, we have moved from different positions of method and theory to a convergence that opens possibilities of mutual enrichment through dialogue with STS, Indigenous communities, feminist standpoint epistemology, ethical-environmental-legal theories, and anthropological ethnography. It is the localism of ethnography that sets the tone for this volume. The authors encounter situations that challenge and disrupt the usual networks of actors that are known to create standards. From the lab bench to a patient’s bedside, from farmers planting traditional crop varieties to genetically engineered seeds, from a sick cow to a provincial election, from settler policies to Indigenous and

environmental rights, these chapters explore the experiences and practices not only of those making standards but also of those subjected to and objecting to imposed standards that affect their everyday lives. Not all the case studies presented here have successful outcomes from the standpoint of one or more parties acting in complex real-world relations. Our perspective has encouraged us to expand the anthropological method of ethnography from participant observation in a small community structured by face-to-face interactions to the study of archival, ethnohistoric, and legal materials seen through an ethnographic lens of meticulous attention to the details of how people accomplish or fail to accomplish goals significant to their everyday lives.

Ethnography is a way of seeing (Wolcott 1999). It is both research methodology and literary form, and it uses a combination of methods that includes participant observation, archival document analysis, and formal and informal interviews (Hammersley and Atkinson 1995). In standardization, as in many other global assemblages, such communities may be virtual, international, or multi-sited (Marcus 1995), and they may coalesce in one place for only short periods of time (e.g., conferences, workshops, political gatherings). The ethnographer must follow the community of interest (Hannerz 2003), including unsettling emergencies (Graham et al. 2018). Through ethnographic engagements using a variety of approaches from collaboration (Krautwurst et al.), legal and archival documentary analysis (Fitting et al.; McMillan; Jenkins), microethnography (Harmon), temporary locals (Holmes et al.), and emergent methods (Le Marcis et al.; and Desclaux), our authors approach the making of and response to standards that matter to those needing practical solutions.

The reader is introduced to a broad spectrum of standards through case studies that illustrate people making, subverting, contesting, and remaking standards that better respond to their everyday lives. Collectively, the chapters stand as testimony to how anthropological research reveals human resistance and resilience as essential ingredients in the reproduction of emergent standards and for the ongoing work of a meaningful common language of inclusion. Reproduction is never exact, and emerging versions of what seem to be the same positions turn out to have quite different implications. This book shows the making of better standards in response to communities of longitudinal end-users, not for quarterly profits. It is aimed at creating what former Chief Dean Jacobs calls “good development” (Chapter 12, this volume). Resonant with an awakening to the Anthropocene, when ice melts, forests burn, and habitats dry up, and pandemics force us towards

new pluralistic normals, our challenge is to create better standards for the future in which we want to live.

In the course of exploring the intersections of ethnographic experiences, we sought a mechanism to capture the iterative complexity within the case studies – a complexity that did not fit a linear model. We adapted the paradigm of the Indigenous Plains Cree medicine wheel to visualize the simultaneous discreteness and inextricability of the permutations and its contrast with conventional Western science models.

Figure I.1 places “Standards” at its centre, with radiating quadrants of variability that move in recursive pattern and mutual interpenetration. The linear logic of Western science does not adequately capture such a process. We argue that the very nature of standards requires us to problematize how they are manifested (and responded to) under different kinds of relations and circumstances (e.g., time and location).

Standards interact with the processes and practices of being made, subverted, challenged, and remade. This is not a linear life cycle but, rather, represents how standards may be responded to by those using or subjected to

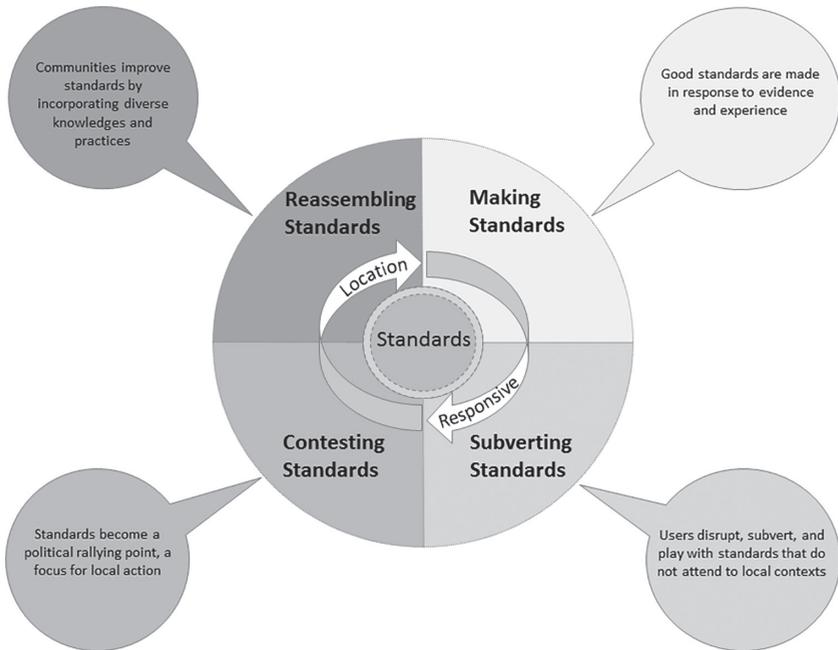


Figure I.1 The Social Life of Standards

them. Standards are used and (re)made over time and location in response to context.

In light of the relative lack of attention given to standards in development contexts, apart from Vincanne Adams's (2010) collection on the metrics of humanitarian aid, *The Social Life of Standards* will be of interest to a broader readership than anthropology and STS, although that is where most of our contributors take their starting point. Indigenous peoples, activists, politicians, and other keepers of the public trust will find the technical nuts and bolts of interest, alongside geographers; political scientists; sociologists; historians; lawyers and legal scholars; scholars of development, of the environment, and of agricultural studies; and officials in public health and international affairs. This volume both complements and expands on Higgins and Lerner's (2010) *Calculating the Social*, which draws on governmentality and actor-network theory to explore standards in diverse contexts. While standards are often hidden from plain view (Busch 2011), the individuals and groups described in *The Social Life of Standards* are caught in the act of exposing and then remaking the global standards imposed on them so that they might, in a syncretic manner, accommodate the meaningful conceptual systems of their and our local world and the global world that we share. Again, this is the "good development" that standards ideally work towards. Such hidden standards operate below the level of consciousness for most actors most of the time and, thus, require mindful reflexivity to tease out their meanings. We are enjoined to confront the conditions of power, the structural violence that bedevils the effective implementation of standards too often reified by their creators as monolithic and already set in stone.

Few would contest standards as indispensable to trade in the markets of science and society, performing a central role in endorsing modernity in the contemporary world (Higgins and Lerner 2010; Busch 2011; Timmermans and Epstein 2010). They are crucial to the regulation of safe and effective technologies and key to the legitimization of evidence and expertise. Their negotiation, communication, and dissemination import stability, credibility, legitimacy, and ultimately trustworthiness to science, technology, medicine, regulation, and – fundamental to human rights – communities. The question of whether standards can be trusted, though, is crucial to regulation and the oversight of how standards work. Standards are at the absolute centre of what we mean by science and how it forms the infrastructure of civil society. Much is at stake, nowhere more so than in the standards that affect human and environmental health and well-being.

At the interface of science and policy, standards are tools and hermeneutic messengers, used initially to structure innovation and later on to manage public risk and invest in the public good. We learn in the pages ahead that standards are at play from the handling of a molecule in the laboratory to the delivery of an experimental drug or vaccine at an emergency clinic and from the compilation of stem cells and databases to the ecological valuation of waters, fields, and forests. The very possibility of standardization relies on a continuously evolving agreement about the values of measurement, evidence, and expertise. Standards determine and become the measures and metrics that are adopted by scientists and clinicians to achieve and interpret the results produced in their laboratories: the p-values that determine significance, the quality and reliability of a research protocol, a surgical procedure or set of guidelines, the shelf life of a medicine. But they go far beyond the science labs and clinics described in Parts 1 and 2 of this volume to political and, most notably, nation-state engagements with Indigenous territorial claims that involve the integrity of the environment and our collective “One Health” so well described in Parts 3 and 4. From their normalization as vehicles to enact the world views of scientific and political elites to their subversion, contestation, and reassemblage during their realization in scientific, clinical, and everyday practice, we read of the integration of global, national, and regional standards with local ones.

The Social Life of Standards conveys a conversation between Canadian applied anthropology’s tradition of engagement that focuses on local knowledge, especially that associated with Indigenous peoples (Waldram 2010; Feit 2017; Darnell 2015, 2018, 2020; Graham 2016b), with a conceptual approach to articulating categories and standards adapted by STS (Bowker and Star 1999; Holmes et al. 2010; Timmermans and Epstein 2010; Busch 2011). The authors explore the tensions and sometimes resolutions that occur when standards that are created to harmonize universal practices, often with the best of intentions, are found to omit important constituents in local contexts. This book provides grist for and expands on Isabelle Stengers’s (2005) vision of a cosmopolitical future in which an inclusive multiplicity of diverse constituents contributes to a genuinely co-operative knowledge ecology. Succeeding in this challenge, however, requires constant work. Shawn Harmon, for example, describes efforts taken to be collaborative and inclusive in the making of standards for the European Bank for Induced Pluripotent Stem Cells (EBiSC). Yet, despite efforts to establish the ethical standards for good governance of stem cell use, the process nevertheless falls somewhat short of Stengers’s hope for a deliberative engagement of all

“constituents” coming together to share common goals of social justice and generational equity; instead, in EBiSC particular stakeholders work on a prefigured interest. We see this same tension between individual and common interest in Udo Krautwurst’s description of a collaborative effort that could not be realized in standard lab practices as well as in the tension between clinical and discovery scientists in Christina Holmes et al.’s account of standards in proteomics science. Despite their surface diversities, the case studies in this volume explore the nuanced ethical work of trying to achieve *collaboration* in negotiations between communities.

The theme of collaboration in striving for better collective standards appears throughout the pages of this book. Dean Jacobs et al. work to find spaces for “collateral opportunities” with oil companies for those protecting Indigenous lands, water, and air, which are embodied, absorbed, and realized in and through the principles of social justice and generational equity. The case studies vary in the extent to which the variety of actors who appear are enabled to go beyond stakeholder interests to achieve Stengers’s vision of constituency. In the making, use, and adaptation of these standards, fundamental issues of power involving authority, expertise, and evidence are laced through negotiations towards social justice. Who are the actors who bring standards into existence, what kinds of evidence do they value, and what mechanisms are used to enforce standards? How do they change and for what reasons? Who and what get left out? The anthropological, historical, political, and legal stories here detail responses to standards that are localized through cycles of formation, subversion, contestation, and reassemblage.

Canadian applied anthropology has been prescient of much that has come to be valued in the sociology of knowledge under the rubric of local knowledge. Implicit in even the earliest studies of anthropology in Canada, which concentrated almost exclusively on Indigenous communities, were the social and cultural contexts entangled in the biopolitics, biopower, and biosocialities that are central to the making of standards (Lock and Bibeau 1992; Bibeau, Graham, and Fleising 2006). Steeped in longitudinal ethnographic studies of traditionally remote Indigenous and settler communities, anthropologists learned about local technical ecological knowledge through carefully observing, respecting, and adopting local practices. They recognized the unique adaptations of “traditions” to present ecological constraints and abundance, colonial influences, trade, resources, treaty-making, and land disruptions. There is always change. For applied anthropologists, understanding the logics of local systems in their material and conceptual

contexts over time is gained through observing and participating in the complexities of everyday life and attending to the local reasoning pertaining to meeting needs and desires. Logic may begin at the conceptual level, but this volume explores its consequences in the material practices of the local reformation of standards in order to describe the substantive nature of that logic. An engaged anthropology takes the relevance of local technical knowledge for granted, for it is essential, and broadens the STS study of standards beyond science and technology into a multiplicity of human relationships enmeshing rivers, forests, animals, communities, foodways, well-being, stem cells, epidemics, industries, legislatures, and treaty claims.

The studies collected here, infused in documentary archival evidence and descriptive ethnography largely among non-elite groups, further this engaged anthropological approach. They provide particular empirical accounts of standards that are made, subverted, contested, and reassembled in practice. Each case study touches on some if not all aspects of non-linear points of passage – we are problematizing all sorts of words and activities that usually go without questioning. Elliott Leyton (1988, 168) suggests that Canadian anthropology is distinctive “not in its methods or concepts, but in the kinds of problems it accepts as legitimate academic concerns, and in its understanding that some form of advocacy may be necessary to supplement the conventional academic analysis.” This anthropological advocacy, policy work of a kind ranging from gentle to ferocious, shines through most of the chapters. Canadian anthropology has a strong analytical tradition in which community-based studies are crafted to inform policy and other complex political issues, including many examinations of traditional ecological knowledge, such as those included in this volume. In seeing standardization as local, contingent, and complex, Timmermans and Epstein (2010, 74) unknowingly situate science studies within a tradition decidedly familiar to Canadian anthropology. While STS examines the process of making standards in science and applies them in widely varying, community-specific, and policy-relevant contexts, this approach has long been a mainstay of Canadian anthropology and is fruitfully applied in the studies in this volume. The co-construction of evidence, expertise, and authority plays throughout these pages. It is the core of making and responding to standards, and it stands effectively at the centre of [Figure I.1](#).

Examining how standards are shaped in the real world, the case studies in this volume bridge advocacy/policy anthropology and STS’s scrutiny of actors and their networks to provide hybrid descriptive accounts of locally specific approaches. They reveal the social, political, and technical

processes and processing as a life cycle that would otherwise be hidden (“blackboxed” in Callon’s [1986a] and Latour’s [1999, 304] parlance) in the scientific, technical, and legal processes. Our authors open these black boxes to reveal their often unruly contents. We recognize that elements of making, subverting, contesting, and reassembling enter into every chapter; that the boundaries of the four parts are porous; and that the accounts defy hard categorization. Nonetheless, we have tried to situate each chapter in the part that most closely captures its argument.

Part 1 concentrates on *Making Standards*, examining the ways in which new scientific standards reveal and exert power relations. In the cases in this part, standards create a conduit to control the dialogue surrounding a local context and import with them a powerful concept or way of viewing the world. As a requirement in contemporary, globalized life, standards function as important manifestations of power relations in the modern world, allowing organization and neoliberal management for technocratic governance (Busch 2011). **Part 1** presents situated accounts of how and why standards are developed, while challenging their nature, purpose, and end results. Standards are seen to promote particular goals, preferencing some values and practices over others, with pragmatic social, ethical, and technical consequences. Actors work from a shared reference point to develop, engage, and legitimize a certain set of standards in specific, particular contexts while ignoring others. Shawn Harmon (**Chapter 1**) starts us off, describing the intertwining of technical, ethical, and operational notions of standards that were negotiated in the establishment of EBiSC, which aims to be a responsible, globally standard-setting entity in the field. The discovery of induced pluripotent stem cells has been met with much anticipation. While many technical and safety hurdles to their clinical application persist, they support a host of valuable pre-clinical outcomes. Internationally networked stem cell banks are expected to consistently supply ethically sourced, standardized, high-quality cell lines. But we discover that, with regard to the process of standardization, the selected experts, while collaborative among themselves, are not entirely inclusive of all communities, and Harmon tells the reader about the preferencing of some values and practices over others during “brutally pragmatic” efforts to create an inclusive EBiSC.

Interested in the measures of qualitative standards in, on, and through scientific discourses and practices, attempts at collaboration in making standards are central to Udo Krautwurst as well (**Chapter 2**). Playing on the differences between standard *lab-practice* and *standard-lab* practice, he

introduces us to a university laboratory in which the work of a collective unit is represented as the personal property of one individual, the principal investigator. Trying to establish local standards for an experimental “open-concept” lab was intended to promote new collectivist practices of collaboration among bioscience researchers. Instead, existing standards from elsewhere in academia, industry, and government, in the forms of explicit and implicit norms and policies, ultimately led to the lab’s dissolution.

Moving beyond the laboratory to scientific conferences, Christina Holmes, Fiona McDonald, and Mavis Jones ([Chapter 3](#)) explore the domestic concerns and globally accountable debates surrounding the role of standards in the translation and international advancement of an emerging proteomics science. Seen through the variable professional standpoints, goals, and needs of scientists and clinicians, the authors demonstrate how the type of science carried out by proteomics scientists dictates their perception of the importance of particular standards. The closer scientists come to translating and commercializing a specific set of protein interactions into a clinical application in the real world, the greater becomes their emphasis on making a broader range of standards.

In [Part 2](#), *Subverting Standards*, we find that standardized entities do not behave as they are supposed to once they are implemented. For scientific or political reasons, the chaos/uncertainty/unpredictability that surrounds human and non-human actors fails to fit into the prescribed channels that are expected of standards. As a result, as a mechanism to localize them, standards are covertly subverted and manipulated so that they can continue within power discourses while being adapted for the local context. From the sterilized, technologically sophisticated labs and international conferences of stem cell and proteomics consortia of [Part 1](#), Frédéric Le Marcis, Daouda Sissoko, Xavier Anglaret, and Denis Malvy ([Chapter 4](#)) take the reader into the crowded makeshift quarters of an emergency treatment unit during the 2014–16 West African Ebola epidemic. During the crisis, rigorous application of the gold standards of evidence-based medicine during a clinical trial for an experimental treatment was not possible. Rather than adhering to these standards, Le Marcis et al. recognize a new set of humanitarian standards, constructed in situ, that emphasize care and compassion in response to the sick and dying. They confront a journal’s external reviewers, who conclude that the clinical trial’s breach of scientific standards produced *weak* scientific evidence. They challenge the medical journal’s censoring of the real-world *constructive* results that showed extraordinary care being given to the sick and dying. Instead of insisting on scientific gold

standards, the authors suggest, clinical science should value the enormous improvements to the quality of palliative care for those dying in a resource-poor setting, where the absence of prevention and treatment would otherwise have resulted in their being abandoned during the emergency response. What is seen by some as a failure to meet evidence-based standards might be countered by a stronger valuation of humanitarian standards – a valuation that would make *care* the standard, an ethical alternative that would apply social justice principles to compensate for, even to take precedence over, “failed” biomedical standards.

While standards are intended to bring everyone to the table to agree on consistent, reliable, reproducible practices, their failure to sufficiently do so at the local level contributes to their disruption and subversion. In the same 2014–16 Ebola outbreak during which Le Marcis et al. opened the tent flap into an emergency treatment unit in Guinea, other West African countries that were not so intensively affected were, in the absence of recommendations and guidelines, nonetheless tasked with applying quarantine in multiple social forms. While quarantine has re-emerged as a public health response, information about the disease and global standards was evolving throughout the Ebola epidemic. Alice Desclaux, both a medical doctor and an anthropologist working with the Ebola biosecurity quarantine practices in Senegal ([Chapter 5](#)), captures how Senegal adapted the World Health Organization’s recommendations for quarantine and standards of care in managing those who came in contact with the disease during the epidemic. Through a twenty-one-day time-lapse portrait at the height of the West African Ebola crisis, Desclaux describes a series of events surrounding Senegalese quarantine standards. Actors used several legitimacy registers to reinforce, weaken, and reshape standard operating procedures (SOPs) as they responded to emerging information coming from official bulletins as well as their experiences and observations.

It is impossible for those working in global health and development not to make comparisons and contrasts between HIV/AIDS, even though it is no longer seen to be as threatening as it once was, and Ebola. Epidemiologists and anthropologists work together with disease modellers to carry out contact tracing and to better understand risk behaviours. Robert Lorway ([Chapter 6](#)) walks readers through the development of a public health research technique designed to make sexual risk visible and measurable across time and space. Following the transnational efforts to standardize HIV/AIDS service delivery in India and Kenya, he examines the life history of a mapping technique to scale up global health service delivery for a highly

techno-bureaucratic regime. Not always welcoming of these interventions, targeted communities subvert the technique in ways unexpected by the scientists who designed it.

In [Part 3](#), *Contesting Standards*, standards are subjected to overt political conflict. Standards seen to represent important local (or global) power differentials that cut across domains of political responsibility are politically contested. Examining negotiations surrounding the local integration of standards through the lens of political contestation, the two chapters in this part describe standards being overtly disrupted, which contrasts with the more covert subversive practices addressed in the previous part. Just as standards subsume but rarely problematize power relations, so do they provide a focus for political tensions and disagreements. [Part 3](#) examines what happens when standards are contested.

Latin America is the site of growing political mobilizations against new seed laws and regulations that advance intellectual property rights (IPR) and non-IPR quality standards. Elizabeth Fitting, Laura Gutiérrez Escobar, and Tamara Wattnem ([Chapter 7](#)) examine this mobilization on the part of farmers and activists in Colombia, where, up until recently, there was little media coverage of or public debate on such issues. They analyze the case of internationally imposed seed standards in Colombia, which sparked a massive protest by Indigenous and Afro Colombian farmers that resulted in pressure on the government to suspend and rewrite legislation. The standards were challenged because of perceptions that they prioritized corporate interests at the expense of the interests of local farmers.

Shifting continents and going back in time nearly a hundred years, Jane Jenkins ([Chapter 8](#)) uses historical archival analysis to challenge what she considers the ennobling of contemporary resistance narratives. She argues that, rather than symbolizing genuine resistance, the contesting of standards can camouflage political schemes. In the early twentieth century, standards to test for bovine tuberculosis strengthened Canada's national economic interests. Jenkins demonstrates how the media and the political opposition turned federal government standards to prevent the spread of bovine tuberculosis to humans in Nova Scotia into a political symbol of federal interference in provincial politics. Although Nova Scotian dairy farmers supported standardization, provincial politicians opposing federalism propagandized (e.g., in editorial cartoons) that farmers, and even the cows themselves, resisted nationally imposed standards.

In the making and subverting of standards in Parts 1 and 2, we learn what happens when standards don't actually fit or act in the way that the experts

say they should. In [Part 3](#), we learn how groups contest these poorly fitting standards and use politics and the courts to try to tailor the emperor's clothes. [Part 4](#) further involves the reader in largely legal engagements with *Reassembling Standards*. Indigenous communities confront the case studies of making, subverting, and contesting standards with issues that maintain the status quo and continue to marginalize the most vulnerable groups in our society. Canada's Truth and Reconciliation Commission, which took place between 2008 and 2015, produced ninety-four calls to action intended to transform Canadian settler-Indigenous relations in the twenty-first century (Truth and Reconciliation Commission 2015). The Canadian nation-state has finally, publicly, acknowledged its negligence, its complicity in broken treaties, unacceptable inequalities, and institutionalized racism towards Indigenous peoples. Still, Canada's adoption on 9 May 2019 of the United Nations Declaration on the Rights of Indigenous Peoples only provides for a "reactive consent," allowing Indigenous communities the right to deny consent to state initiatives, rather than a "proactive consent," which, in applying the 1960 United Nations Declaration on the Granting of Independence to Colonized Countries and Peoples (1514 [XV]), would require that the initiatives be generated or that governments react to initiatives generated by Indigenous communities (Asch, forthcoming).

The standards being proposed in this volume, including the Indigenous examples in [Part 4](#), speak to Asch's "proactive consent," raising issues of alternative ways of thinking, of relational ontologies that construct the world and its sentient inhabitants as sharing a common goal if not a means for getting there. Each person may agree or not for their own reasons and still participate effectively. Consensus does not mean that everyone agrees; rather, it means that everyone agrees to respectfully acknowledge the range of views and to accommodate them insofar as that is feasible. It takes a long time to make decisions in this fashion, but when there is agreement, movement forward is often innovative and widely supported (Darnell 2018). Communities *actively* challenge in courts of law the standards that were originally fashioned by outsiders and that do not meet local needs. They assemble local knowledge, processes, and practices to propose better, *good* standards that might counter the structural inequities of historically inadequate housing, education, and health resources, and the ongoing exploitation by lumber and oil sand corporations that threaten to leak pollutants into the rivers and streams and valleys that have sustained generations of people. Community-based standards and thresholds are important tools for strengthening community knowledge and improving local capacities to

articulate and deal with health and environmental challenges. [Part 4](#) contains stories of people who have always been where they are today: “Indigeneity” is defined as having no homeland elsewhere.

Our authors describe Indigenous standards for land and water and follow their presentation in federal courts in an attempt to uphold Indigenous rights. In the backdrop of the Truth and Reconciliation hearings that have reinforced Indigenous rights in Indigenous-settler relations in Canada, Jane McMillan ([Chapter 9](#)) tells of Indigenous peoples being bombarded with standards that were largely constructed, imposed, and enforced by external agents. Failing to conform continues to result in severe interventions by state agencies and has been used as a justification for higher rates of surveillance, more child apprehensions, longer prison sentences, and more frequent designations as dangerous offenders. She outlines the legal mechanisms used to perpetrate this violence, moving her lens from a history of abuses by the federal nation-state to the reassembling of standards for child welfare by the Mi'kmaw Nation in Nova Scotia, still an act in progress. Legal standards set by and for settlers in the Act for the Gradual Enfranchisement of Indians, 1869, undermined Indigenous legal traditions and ways of life, removing Indigenous authority in decision making in their communities; the Indian Act, 1876, defined who could be Indian based on settler “standards.” McMillan’s chapter details the need to “unmake” and remake evaluative and risk assessment standards that are used to judge First Nations in ways that are detrimental to them and that are a systemic extension of colonial/settler culture. It explores how collaborative research may better engage Indigenous and settler communities in generating standards that protect Indigenous interests, translate Indigenous knowledge, and foster Indigenous rights and settler reconciliation.

Settlers saw early on the value of the forest that now makes up the iconic Canadian Algonquin Provincial Park, which is celebrated worldwide for its “natural beauty.” Ian Puppe ([Chapter 10](#)) describes how they set it aside, promising progressive practices that would preserve, protect, and benefit the forest, animals, and climate. Yet, from the outset, the park has been a site of resource extraction and has been intimately involved in the dispossession of land and livelihoods from the Algonquin Nation/people. Puppe examines how the forestry and park standards through which resources become understood, evaluated, and managed are premised on ethnocentric colonial interpretations of ecology that dismiss alternative ethno-ecological values. Puppe questions the underlying evidence that is used and how it could better incorporate Indigenous ecological knowledge and standards.

Craig Candler ([Chapter 11](#)) argues that environmental assessment standards would be better if they incorporated local and traditional “standards.” He shows us how Indigenous ecological knowledge can and should be inserted into environmental assessment processes. Regulation is a heuristic process that involves getting some things to stick while letting other things slip away. Candler traces what happens when powerful actors are also unruly ones, and he looks at how communities mobilize locally defined standards and thresholds to identify and challenge those who are pushing for large-profit industrial developments, from resource extraction to ski hill resorts. Candler’s account shows the power of big corporations to bend expertise and environmental assessment evidence in their favour. He gives examples of standards that contrast the sacred and the profane, examples that are still in the courts at the time of writing and that may well remain there for some time, with history on the side of the Indigenous groups.

Former chief Dean Jacobs, Regna Darnell, and Gerald McKinley ([Chapter 12](#)) advance the concept of “good development,” showing how Walpole Island First Nation (WIFN) used it to change its role in environmental assessment. In their account, “good development” refers to alternative requirements for development that met the needs and values of WIFN during its environmental assessment negotiations with Shell Oil. Collaboration, which is discussed in many of the chapters, is seen to succeed to some extent with WIFN because, as Jacobs insists, WIFN is not going anywhere and so has time to listen to everyone’s voices and to wait out Shell Oil. In this way, during the environmental assessment (EA) process for a new \$15 billion Shell Oil refinery, WIFN helped define Aboriginal participation in environmental health standards until, in 2008, a global recession caused Shell to put the project on hold indefinitely.

Together, the chapters in this book describe communities both covertly and overtly dismantling and then reassembling the standards imposed on them. In starting out as a radical act of political engagement, the goal is to attain a higher-order symmetrical standard that resolves the inequities of earlier versions of standards formation. As many of our authors show, power differentials that are at play within the formation and application of standards affect the ability of local communities to have their alternative standards accepted. Nevertheless, the chapters in [Part 4](#) show the importance of such struggles for mechanisms, metrics, and avenues whose purpose is to achieve a common set of inclusive, inevitably more dynamic, living standards that recognize and value the many over the few.

Finally, in the Conclusion, Janice Graham ties the intertwining themes from the volume together, locating STS within a long-practised Canadian anthropological tradition – a tradition based on advancing theories and policies collaboratively cradled in local and Indigenous technocultural ecological knowledge.

In this volume we take the reader on a journey where standards developed elsewhere get reassembled locally and thereby become “localized.” As actors developed in sociotechnical relations, standards are necessarily engaged in an ongoing, dynamic, non-linear process of “becoming” and functioning effectively (Callon 1986b; Fuentes 2013; Graham and Jones 2016). Their use and content respond to context. We illustrate highly innovative research that analyzes the process whereby local actors make, subvert, contest, and reassemble the standards imposed on them. Technical standards are seen to be intimately intertwined with social, ethical, and operational notions of their usefulness. While their particular ontologies clearly aim at there being stable, universally accepted methodologies, protocols, practices, and laws – in other words, “the” dominant guidance procedure for the way to do “it” correctly – in practice, standards are tampered with, subverted, disrupted, or adapted. As dynamic and, as we shall see, often fleeting markers of change, standards get contested and are sometimes defended, becoming the focus for political tensions and disputes. Inevitably, after the wars are waged, the standards are reassembled through truce, local modifications, and active engagement in the creation of new standards. And so, standard-making begins all over again.

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