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ARTICLES

CONSTITUTING BODIES INTO THE FUTURE: TOWARD A RELATIONAL THEORY OF INTERGENERATIONAL JUSTICE

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I. INTRODUCTION

Critical race feminist Angela P. Harris, noting that scientists have professed the arrival of the “Anthropocene era”, theorizes the complex relationship between fossil fuels, environmental degradation and inequality, arguing that “ecological vulnerability” must become central to political theory.¹ The Holocene era, according to scientists, has drawn to a close, displaced by profound human-caused changes to our planetary environment that warrant recognition and naming as a new geologic era.² What distinguishes the present moment is not the fact of rapid environmental change (which has been caused in the past by asteroids, among other factors), or the bare

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¹ Angela P Harris, “Vulnerability and Power in the Age of the Anthropocene” (2014) 6:1 Wash & Lee J Energy Climate & Env’t 98 at 101, citing Will Steffen et al, “The Anthropocene: Conceptual and Historical Perspectives” (2011) 369:1938 Phil Trans R Soc A 842 at 847.

² See Harris, *supra* note 1 at 101.

fact of human impact on the environment (as humans have always had an impact insofar as we have been “embedded in biological systems”), but rather the unprecedented scale and pace of human impact.³

Questions of justice now unfurl on spatial and temporal scales at once global and microscopic, immediate and spanning through the ages. Legal and political concepts of causation and responsibility are complicated and reconfigured by our growing awareness of the intergenerational consequences of contemporary choices. In this context, the House of Commons Standing Committee on Environment and Sustainable Development (“Standing Committee”) recently recommended that the Government of Canada create “an advocate for Canada’s future generations.”⁴ The Standing Committee’s report expressly cites growing transnational and international attention to the demands of “intergenerational equity”, noting that various jurisdictions have experimented with institutional committees or advocates for future generations.⁵ The challenges to such projects are daunting. How can we know our obligations to future persons who do not yet exist, or may not even come into being?⁶

³ *Ibid* at 100.

⁴ House of Commons, Standing Committee on Environment and Sustainable Development, *Federal Sustainability for Future Generations – A Report Following an Assessment of the Federal Sustainable Development Act* (June 2016) at 22, online: <ourcommons.ca> [Standing Committee, *Federal Sustainability*].

⁵ *Ibid* at 23–24. For an overview of international and domestic legal commitments and institutions for future generations, see *Intergenerational Solidarity and the Needs of Future Generations*, UNGAOR, 68th Sess, Annex, Agenda item 19, UN Doc A/68/150 (2013) at paras 32–48, online: <<https://sustainabledevelopment.un.org/content/documents/2006future.pdf>> [United Nations].

⁶ Note in particular the Standing Committee’s observation that “future generations have no voice in today’s decision making that will ultimately affect their interests”: Standing Committee, *Federal Sustainability*, *supra* note 4 at 22. This concern that the interests of voiceless future persons pose a challenge for democratic governance is a common theme in intergenerational justice literature—much of which focuses on creating institutions that might serve a representative function respecting future generations. For overviews of proposed institutional responses, see Michael Kates, “Justice, Democracy, and Future Generations” (2015) 18:5 *Crit Rev Int’l Soc & Pol Phil* 508; Philippe Van Parijs, “The

Edith Brown Weiss's foundational articulation of "intergenerational equity" urges us to imagine that "each generation receives a natural and cultural legacy in trust from previous generations and holds it in trust for future generations."⁷ The concept, drawing on legal trusteeship, conjures a series of distinct and identifiable "generations", linked to each other through a chain of discrete transactions.⁸ This analytic move—treating generations as monoliths with separate, identifiable, and competing interests—is a remarkable feature of the exploding body of literature on "intergenerational justice" and "intergenerational equity."⁹ Intergenerational justice, on this account, is concerned with a "fundamentally different" problem from *intra*-generational justice, which concerns disparities of circumstances, resources, or interests *within* a given generation. These disparities have been a central focus of the environmental justice movement, but have been given

Disenfranchisement of the Elderly, and Other Attempts to Secure Intergenerational Justice" (1998) 27:4 *Philosophy & Public Affairs* 292; Dennis F Thompson, "Democracy in 'Time: Popular Sovereignty and 'Temporal Representation" (2005) 12:2 *Constellations* 245.

⁷ Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (New York: Transnational Publishers, 1989) at 2 [Brown Weiss, *In Fairness*].

⁸ In fact, Brown Weiss explicitly references legal-doctrinal articulations of common law and civil law trust doctrine in her analysis. See *ibid* at 2, n 3; Edith Brown Weiss, "The Planetary Trust: Conservation and Intergenerational Equity" (1984) 11:4 *Ecology LQ* 495.

⁹ The terms "intergenerational justice" and "intergenerational equity" appear to be used interchangeably in much of the literature. But see United Nations, *supra* note 5 (proposing that intergenerational justice is a broader concept in that it includes not only distribution over time, but also "procedural, restorative, and retributive dimensions" at para 10). We have preferred to use the term "intergenerational justice" in describing our own project, because we think that it is more evocative of the "social justice" and "environmental justice" traditions that inform our analysis—and because it avoids the implication that generations are units that may be subjects of "equity". Because we seek to problematize the treatment of "generations" as the relevant unit of analysis, it might be even more precise to use a term like "intertemporal justice" (or even "intertemporal relations", to avoid the individualistic tenor of "justice" in some strands of liberal legalism), but we have instead elected "intergenerational justice" so as to keep this work more directly in conversation with the existing scholarship in this field.

little if any attention by many scholars working under the banner of intergenerational equity.¹⁰

In order to conceive of intergenerational justice, conventional constructions (which we will refer to as “the orthodox approach”) resort to rough *averages* across time, glossing over the vast disparities in how the resources of the “trust” are distributed amongst the so-called “beneficiaries”. In order to operationalize the concept, then, one must create an aggregate measure of well-being rather than “analyse the various circumstances and living conditions of individuals at a given point in time.”¹¹ The United Nations’ influential Brundtland Report of 1987, following Brown Weiss, adopted a formulation of “sustainable development” that similarly flattens the vast social differences between people inhabiting any given moment, calling for “development which meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹² Critics remark that this approach “reflects a concern with equity mainly in the inter-generational sense. . . . [with] only a faint suggestion in the definition of concern for distributive justice in the intra-generational sense.”¹³

¹⁰ This split parallels the division Harris observes between discourses of “social justice” and “sustainability”: Harris, *supra* note 1 at 104–05. See also Andrew Dobson’s related observation of a disconnect between discourses of “justice” and “sustainability”: Andrew Dobson, “Introduction” in Andrew Dobson, ed, *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice* (New York: Oxford University Press, 1999).

¹¹ Joerg Chet Tremmel, “Introduction” in Joerg Chet Tremmel, ed, *Handbook of Intergenerational Justice* (Cheltenham: Edward Elgar Publishing Limited, 2006) 1 at 5.

¹² *Report of the World Commission on Environment & Development: Our Common Future*, UNWCEDOR, UN Doc A/42/427 (1987) at para 27.

¹³ Michael McCloskey, “Emperor Has No Clothes: The Conundrum of Sustainable Development” (1999) 9:2 *Duke Envtl L & Pol’y F* 153 at 154. Sumudu Atapattu observes that, not coincidentally, “[a]lthough it is not possible to generalize, Northern countries tend to emphasize intergenerational equity, while Southern states tend to emphasize intragenerational equity”: Sumudu Atapattu, “The Significance of International Environmental Law Principles in Reinforcing or Dismantling the North-South Divide” in Shawkat Alam et al, eds, *International Environmental Law and the Global South* (New York: Cambridge University Press, 2015) 74 at 91–92.

In other words, the problems of “intra-generational justice” are cast on the orthodox account as separable and separate from justice of the “intergenerational” variety. It is this dichotomous treatment of intra- and intergenerational justice that we wish to challenge, using the context of “everyday toxics” as our central case study. We argue that this tendency in the orthodox intergenerational justice literature to define the “interests” of a given generation as an aggregate of all individual interests, is both misleading as description and perilous as prescription. It glosses over the significant disparities within generations, and thus cannot provide the analytical tools to think about how those disparities persist and transform over time. The conventional, dualist theory of intergenerational equity referenced above has generally been developed in the contexts of climate change and natural resource depletion. Given the reality that particular individuals and communities will have different abilities to insulate themselves from the effects of climate change and resource scarcity, there is reason to doubt this approach even in the contexts where it was first advanced.¹⁴ But in the context of everyday toxics, the social dimensions of potential intergenerational harms are especially stark.

This article will illustrate the interconnections between—in fact the inseparability of—intra- and intergenerational justice, focusing on two categories of “everyday toxics”. Exposure to everyday toxics occurs routinely to everyone living in the industrialized Global North as they move through their days coming into repeated contact with endocrine-disrupting chemicals and other toxics present in ambient air and drinking water, and “built-in” to their home, work and school environments.¹⁵ The two categories of everyday toxics that we employ in this paper are Brominated Flame Retardants (BFRs) and phthalates. Exposures to BFRs and phthalates present initial adverse health risks to those exposed, and they

¹⁴ See Anna Grear, “Towards New Legal Futures? In Search of Renewing Foundations” in Anna Grear & Evadne Grant, eds, *Thought, Law, Rights and Action in the Age of Environmental Crisis* (Cheltenham: Edward Elgar, 2015) 283 at 286.

¹⁵ Endocrine Disruptors Action Group, *Toxic by Design: Eliminating Harmful Flame Retardant Chemicals From Our Bodies, Homes, & Communities* (2016), online: <endocrinedisruptorsaction.org>.

may also have consequences for the generations that flow from those initially exposed. These consequences cannot be adequately understood or addressed without attention to the matrix of social, ecological, and material forces that bring these chemicals into economies, communities, homes, and bodies; that shape the lives of those experiencing their possible effects; and that build the pathways through which those effects traverse generations.

In light of these interlocking social, ecological, and material realities of exposure and effects, we advance an alternative theoretical approach drawing on *relational theory*, a body of scholarship that has long advocated contextual analysis, focus on the embodied diversity of individual persons, and appreciation for the centrality of social relationships in defining justice problems and crafting responses. The literature on relational theory to date has not engaged directly with questions of *intergenerational justice*—questions which are at the center of our consideration of everyday toxics, given the long time-horizons of their possible effects.¹⁶ As noted above, the orthodox account of intergenerational justice often lacks a sophisticated account of social relationships. Our aim in this paper is to bridge the gap between these approaches by exploring what a *relational account of intergenerational justice* might entail.

Part II of this paper elaborates our core case study: everyday exposure to endocrine-disrupting (or hormone-disrupting) chemicals, particularly BFRs and phthalates. We explain our choice to focus on this particular issue with reference to several contextual factors that make BFR and phthalate exposure a particularly salient context for working through a more relational account of intergenerational justice, namely: (1) the ubiquity of these chemicals, and the enduring political economic context undergirding their pervasiveness, (2) the nature and uncertainty of potential harms, and (3) the social determinants of exposure levels and possible adverse health consequences.

Part III describes the orthodox account of intergenerational justice, and its critics, emphasizing this account's problematic tendency to elide significant social contexts through recourse to generational aggregates. Part IV introduces our proposed alternative: a relational approach to

¹⁶ See Part IV, below.

intergenerational justice. This part begins by setting out the basic contours of relational theory, a body of scholarship that has long emphasized attention to context and relationship, and setting out the challenges and opportunities that long time horizons pose for relational theory. The balance of the paper explores two dimensions of “uncertainty” about the future which demand further exploration in order to flesh out a relational account of intergenerational justice: the uncertainty that derives from the fact that the forces of toxic materiality resist prediction and control (Part IV.A), and the indeterminacy that derives from a context where the relevant constituencies do not yet exist—focusing in particular on critical perspectives on futurity and embodied difference (IV.B). These explorations will draw on interdisciplinary scholarly traditions—material feminism and critical disability studies respectively—that have developed largely outside of legal scholarship.

More specifically, Part IV.A will build on existing relational criticisms of the privileging of “control” in liberal accounts of human autonomy, and will confront the challenge of how political communities might craft stances towards present and future justice problems which embrace uncertainty while resisting defeatism. This part will rely on scholarship within a material feminist mode to illuminate the extent to which our desires to predict and “control” our futures may be troubled by the activities of chemicals and other materials whose movements might be understood as “agentic”.

Part IV.B will ask how the relational imperative to solicit diverse perspectives might operate in an intergenerational context where some relevant constituencies do not yet exist, and cannot therefore be directly consulted in contemporary legal and political processes. This section will resist the tendency in the orthodox intergenerational justice literature to resort to “objective” accounts of human interest, and will argue instead that a relational approach to intergenerational justice requires attention to diverse perspectives on futurity. To this end, this section will elaborate on one crucial discourse that is omitted from the orthodox account of intergenerational justice, and from many public conversations about everyday toxics, namely critical disability studies. In particular, this exploration will demonstrate the need for caution in defining “harm” in ways that are both responsive to the potentially urgent consequences of

toxic exposures, and respectful of the diverse bodies that populate our contemporary and future worlds.

Part V concludes with a synthesis of the ways in which these analyses might contribute to an ecologically- and materially-immersed relational account of intergenerational justice. Here, the orthodox framing of a series of discrete, monolithic “generations” with distinct and competing interests is replaced by an account of embodied subjects who are constituted by interwoven threads of personal, institutional, material, and ecological relationships—each of which connect persons and responsibilities over time. While the focus of this article is on the need to reorient the theoretical foundations of intergenerational justice, some reflections are offered in conclusion on the more concrete implications of our proposed approach for efforts to craft laws and institutions that may better account for the diverse interests of future persons.

II. EVERYDAY TOXICS IN CONTEXT

Lead poisoning from tap water in Flint, Michigan presents a recent, unusually public example of the uneven effects of everyday toxics in North America.¹⁷ A growing body of scientific research on everyday toxic exposure has led to a shift in “concern about environmental pollution from outdoors to indoors . . . , and from rivers to veins.”¹⁸ Unlike lead, around which there

¹⁷ See “That Flinty Taste: How Michigan State Government Endangered the People of Flint” *The Economist* (23 January 2016), online: <www.economist.com>. The horror in Flint demonstrates vividly the way that today’s toxic exposures (in this case lead, which harms the brains of growing children) are layered onto existing disadvantage (the racism that poor, Black children in Flint already face), and constitute our futures (as those exposed children grow in to adults with high health burdens and lower earnings, further fuelling racist attitudes that diminish them and their own future children’s worth). See also Laura Pulido, “Flint, Environmental Racism, and Racial Capitalism” (2016) 27:3 *Capitalism Nature Socialism* 1 (arguing that Flint’s poisoning is a powerful example of environmental racism and racial capitalism).

¹⁸ RG Altman et al, “Pollution Comes Home and Gets Personal: Women’s Experience of Household Chemical Exposure” (2008) 49:4 *J Health & Soc Behav* 417 at 418, citing Douglas Fischer, “State to Trace Toxins from Streams to Veins”, *The Oakland Tribune* (29 September 2006). See also Lee Clarke, *Acceptable Risk? Making Decisions in a Toxic Environment* (Berkeley: University of California Press, 1989); Michelle Murphy, *Sick*

is scientific consensus as to the gravity of exposure harms,¹⁹ the health consequences of many everyday toxics, like the BFRs and plasticizers such as phthalates that we encounter every day, remain disputed.²⁰ Our focus on the examples of BFRs and phthalates should not be interpreted as a claim that these chemicals are the most dangerous, or even that everyday toxics in general present the most urgent intergenerational justice problems; instead, we focus on these exposures because they highlight the very epistemic indeterminacy that must attend serious consideration of many questions of intergenerational justice. In particular, BFRs and phthalates present us at once with several challenges: pervasive exposure; disparate impacts; and harms that are at once uncertain, potentially grave, and probably intergenerational.

A. PERVASIVE EXPOSURE

The word “ubiquitous” peppers the scientific literature describing BFRs and phthalates in the industrialized Global North.²¹ High-molecular weight

Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience and Women Workers (Durham: Duke University Press, 2006).

¹⁹ See JC Carlisle et al, “A Blood Lead Benchmark for Assessing Risks from Childhood Lead Exposure” (2009) 44:12 J Envtl Sci Health A 1200; LM Cleveland et al, “Lead Hazards for Pregnant Women and Children, Part 2: More Can Still Be Done to Reduce the Chance of Exposure to Lead in At-risk Populations” (2008) 108:11 Am J Nursing 40.

²⁰ See Part II.C, below.

²¹ See e.g. Kazuhiko Akutsu et al, “Polybrominated Diphenyl Ethers in Human Serum and Sperm Quality” (2008) 80:4 Bull Envtl Contamination & Toxicology 345 at 345 (abstract); Richard Grady & Sheela Sathyanarayana, “An Update on Phthalates and Male Reproductive Development and Function” (2012) 13:4 Curr Urology R 307 at 310; Shanna H Swan, “Environmental Phthalate Exposure in Relation to Reproductive Outcomes and Other Health Endpoints in Humans” (2008) 108:2 Envtl Res 177 at 177–78; Kyoung-bok Min & Jin-young Min, “Urinary Phthalate Metabolites and the Risk of Low Bone Mineral Density and Osteoporosis in Older Women” 99:10 (2014) J Clinical Endocrinology Metabolism E1997–E2003 at E1998, e2002; Ami R Zota, Gary Adamkiewicz & Rachel A Morello-Frosch, “Are PBDEs an Environmental Equity Concern? Exposure Disparities by Socioeconomic Status” (2010) 44:15 Envtl Sci & Tech 5691 at 5691 [Zota et al, “PBDEs”].

phthalates are used as plasticizers in polyvinyl chloride (PVC), which is in turn used in building materials, plumbing, floors, wall coverings, and food processing equipment.²² Phthalate esters are used as solvents and plasticizers in lacquers, varnishes, nail polish, hairspray, perfumes, lotions, cosmetics, pharmaceutical capsules, medical devices (including intravenous tubing, blood nutrient bags, and tubing used in neonatal intensive care nurseries), and children's toys and bath books.²³ These common chemicals have been detected in household dust, food, drinking water, and human breast milk.²⁴ Studies of human exposure to phthalates have "established an accepted consistent presence of these chemicals in human systems,"²⁵ and the Center for Disease Control reports that nearly all Americans exhibit "measurable levels" of phthalates in their bodily tissues.²⁶

Brominated Flame Retardants—BFRs—are similarly ubiquitous, used in mattresses, upholstered furniture, televisions, computers, cars, clothing, and children's toys.²⁷ Like phthalates, BFRs are found in household dust,²⁸

²² See Donatella Caserta et al, "The Influence of Endocrine Disruptors in a Selected Population of Infertile Women" (2013) 29:5 *Gynecological Endocrinology* 444 at 446; Grady & Sathyanarayana, *supra* note 21 at 307; Swan, *supra* note 21 at 177.

²³ See Swan, *supra* note 21 at 178; Donatella Caserta et al, *supra* note 22 at 446.

²⁴ See Grady & Sathyanarayana, *supra* note 21 at 307, citing Ruthann A Rudel et al, "Phthalates, Alkylphenols, Pesticides, Polybrominated Diphenyl Ethers, and Other Endocrine-disrupting Compounds in Indoor Air and Dust" (2003) 37:20 *Envtl Sci & Tech* 4543 and Katharina M Main et al, "Human Breast Milk Contamination with Phthalates and Alterations of Endogenous Reproductive Hormones in Infants Three Months of Age" (2006) 114:2 *Envtl Health Perspectives* 270.

²⁵ Grady & Sathyanarayana, *supra* note 21 at 309, citing Michael H Hsieh et al, "Associations Among Hypospadias, Cryptorchidism, Anogenital Distance, and Endocrine Disruption" (2008) 9:2 *Curr Urology R* 137.

²⁶ Grady & Sathyanarayana, *supra* note 21 at 307, citing US, Centers for Disease Control and Prevention, *Third National Report on Human Exposure to Environmental Chemicals* (Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Laboratory Sciences, 2005).

²⁷ See Akutsu et al, *supra* note 21 at 345; John D Meecker et al, "Polybrominated Diphenyl Ether (PBDE) Concentrations in House Dust are Related to Hormone Levels in Men" (2009) 407:10 *Sci Total Environment* 3425; Chanley M Small et al, "Reproductive

and are “increasingly present in the environment and humans.”²⁹ BFRs have been found in human blood, tissue, and breast milk, at particularly elevated levels in North America where the use and manufacture of BFRs remain highest.³⁰ Even in jurisdictions where the manufacture and use of specific BFRs has been phased-out or curbed (either voluntarily or under legal compulsion), human exposure continues due to the presence of those substances in older products, and due to the environmental persistence of these chemicals.³¹

The reasons for this pervasiveness are complex. Capitalist imperatives of growth and accumulation, and Global North consumerism are major drivers.³² Phthalates are widely considered to have useful applications that

Outcomes Among Women Exposed to a Brominated Flame Retardant in Utero” (2011) 66:4 Arch Env & Occup H 201 at 201; Young Ran Kim et al, “Health Consequences of Exposure to Brominated Flame Retardants: A Systematic Review” (2014) 106 Chemosphere 1 at 2.

- ²⁸ See Meeker et al, *supra* note 27 at 3425, citing Joseph G Allen et al, “Linking PBDEs in House Dust to Consumer Products Using X-ray Fluorescence” (2008) 42:11 Env’tl Sci & Tech 4222.
- ²⁹ Kim et al, *supra* note 27 at 2. See also Mahiba Shocib et al, “Legacy and Current-Use Flame Retardants in House Dust from Vancouver, Canada” (2012) 169 Env’tl Pollution 175.
- ³⁰ See Meeker et al, *supra* note 27 at 3425. See also Small et al, *supra* note 27 (noting widespread exposure at 201), citing Andreas Sjodin et al, “Serum Concentrations of Poly-brominated Diphenyl Ethers (PBDEs) and Polybrominated Biphenyl (PBB) in the United States Population: 2003–2004” (2008) 42:4 Env’tl Sci & Tech 1377 (and noting persistence in the environment and organic tissue); Kathleen Kreiss, Caralee Roberts & Harold EB Humphrey, “Serial PBB Levels, PCB Levels, and Clinical Chemistries in Michigan’s PBB Cohort” (1982) 37:3 Arch Env’tl Health 141; and Jacob de Boer, Karin de Boer & Jan P Boon, “Polybrominated Biphenyls and Diphenyl Ethers” in Jaakko Paasivirta, cd, *The Handbook of Environmental Chemistry: Part K: New Types of Persistent Halogenated Compounds*, vol 3 (Berlin: Springer-Verlag, 2000) 61.
- ³¹ See Meeker et al, *supra* note 27 at 3425, citing US EPA, *Polybrominated Diphenyl Ethers (PBDEs) Project Plan* (Washington, DC: United States Environmental Protection Agency Office of Pollution Prevention Toxics, 2006). See also Kim et al, *supra* note 27 at 2.
- ³² This has been recognized in the climate change context as well. See e.g. P Newell & M Patterson, *Climate Capitalism: Global Warming and the Transformation of the Global*

cannot be readily duplicated by non-toxic substances.³³ Moreover, phthalates are made from the by-products of oil refining, and their manufacture is supported by “industrial ecologies” that encourage the repurposing of toxic waste.³⁴ BFRs rely on chemical inputs which are highly toxic, resulting in a small number of manufacturing sites concentrated in the United States and Israel.³⁵ The BFR industry has been active in promoting standards that effectively require the use of these flame retardants in household products as a fire safety precaution, despite questions about the safety and effectiveness of BFRs in real fires.³⁶ In both cases, powerful economic actors have carefully cultivated a regulatory environment in which uncertain, contested and incomplete scientific evidence about the health effects of everyday toxic exposures persists.³⁷

Economy (Cambridge: Cambridge University Press, 2010); M Koch, *Capitalism and Climate Change: Theoretical Discussion, Historical Development and Policy Responses* (Basingstoke: Palgrave Macmillan, 2012).

³³ As an example, the addition of phthalates to PVC, such as for use in plumbing, renders plastic less brittle and thus more durable and versatile. According to the Lowell Center for Sustainable Production, PVC products contain up to 50% by weight of plasticizers, mostly phthalates. While there are alternatives available, many of them are also of unknown toxicity. See Lowell Center for Sustainable Production, *Phthalates and Their Alternatives: Health and Environmental Concerns* (Lowell, MA: University of Massachusetts, 2011), online: <sustainableproduction.org>.

³⁴ See e.g. Hardin B Tibbs, “The Value Loop – A New Framework for Business Thinking” in Dora Marinova, David Annandale & John Phillimore, eds, *The International Handbook on Environmental Technology Management* (Northampton, MA: Edward Elgar, 2006).

³⁵ See P Guerra et al, “Introduction to Brominated Flame Retardants: Commercially Products, Applications, and Physicochemical Properties,” in E Eljarrat and D Barcelo, eds, *Brominated Flame Retardants*, Handbook of Environmental Chemistry, vol 16, (Heidelberg: Springer, 2011) 1 at 6–7.

³⁶ See Endocrine Disruptors Action Group, *supra* note 15.

³⁷ See e.g. David Michaels, *Doubt Is Their Product: How Industry’s Assault on Science Threatens Your Health* (Oxford: Oxford University Press, 2008); F Pearce & S Tombs, “Toxic Capitalism: Corporate Crime and the Chemical Industry” in D Whyte, ed, *Crimes of the Powerful: A Reader* (Maidenhead: Open University Press, 2009) 93.

These dynamics are exacerbated by the endurance, in Canada and the United States, of a “permissive approach” to chemicals regulation in which the burden of proof falls on those trying to show that chemicals are harmful, and not on those who profit from their production and release.³⁸ Since the early 1990s, environmental advocates have made efforts to pressure state regulators to adopt a more precautionary approach.³⁹ But while the “precautionary principle” has been enshrined in policy statements and legislative preambles, the operation of the relevant regulatory frameworks are still largely permissive in practice.⁴⁰ In line with this approach, and driven by the prevailing tenets of neoliberalism, the reforms that have been introduced to manage the emerging risks from everyday toxics have favoured voluntary, information-based regulatory measures.⁴¹ There are thus relatively few legal restraints on the industrial and market processes driving the production of these chemicals, and their incorporation into consumer products.⁴² In cases where particular compounds are restricted, scientists and industry act quickly to supply

³⁸ See e.g. Lynda Collins & Heather McLeod-Kilmurray, *The Canadian Law of Toxic Torts* (Toronto: Canada Law Book, 2014); Dayna Nadine Scott, “Testing Toxicity: Proof and Precaution in Canada’s Chemicals Management Plan” (2009) 18:1 RECIEL 59 [Scott, “Testing Toxicity”]; Adam DK Abelkop & John Graham, “Regulation of Chemical Risks: Lessons for Reform of the Toxic Substances Control Act from Canada and the European Union” (2015) 32:1 Pace Envtl L Rev 108.

³⁹ See e.g. Hugh Benevides & Theresa McClenaghan, *Implementing Precaution: An NGO Response to the Government of Canada’s Discussion Document* (Toronto: Canadian Environmental Law Association, April 2002), online: <www.cela.ca/sites/cela.ca/files/uploads/419precautionary.pdf>. See also the recent report of the Standing Committee: House of Commons, Standing Committee on Environment and Sustainable Development, *Healthy Environment, Healthy Canadians, Healthy Economy: Strengthening the Canadian Environmental Protection Act, 1999* (June 2017), online: <<http://www.ourcommons.ca/DocumentViewer/en/42-1/ENVI/report-8>>.

⁴⁰ Scott, “Testing Toxicity”, *supra* note 38.

⁴¹ Dayna Nadine Scott, “Thinking about Thresholds, Literal and Figurative” in Dayna Nadine Scott, ed, *Our Chemical Selves: Gender, Toxics, and Environmental Health* (Vancouver: UBC Press, 2015).

⁴² See e.g. *Phthalates Regulations*, SOR/2010-298, and *Children’s Sleepwear Regulations*, SOR/2011-15 (for examples of existing regulations in Canada).

chemicals with similar properties which have not yet been subject to scientific scrutiny or advocacy and attention.⁴³ This problem of “regrettable substitution” has given rise to the critique that the health and environmental agencies charged with ensuring chemical safety have been drawn into a costly game of regulatory “whack-a-mole”.⁴⁴

B. DISPARATE IMPACT

As pervasive as BFR and phthalate exposure may be, it is not evenly distributed. In fact, researchers have begun to chart familiar patterns of human exposure across demographic groups.⁴⁵ Their findings suggest that, whatever the precise effects of BFR and phthalate exposure prove to be, they will likely be felt unevenly across diverse social constituencies. This research has shown, for example, that workers in certain manufacturing industries exhibit higher phthalate levels and that e-waste recycling workers have higher BFR levels due to occupational exposure.⁴⁶ Certain racialized groups,⁴⁷ and those with lower levels of income and education,⁴⁸ have also

⁴³ See e.g. Gregory DL Morris, “Phthalates Ban in ‘toys Spurs Alternatives” (2009) 171:5 *Chemical Week* 25; Arlene Blum, “Tackling Toxics” (2016) 351:6278 *Science* 1117. Widespread animal testing is permitted and encouraged at every stage of this process, with no legal onus on any party to establish that the chemicals at issue will be put to socially useful or necessary applications. See e.g. Lesli Bisgould, *Animals and the Law* (Toronto: Irwin Law, 2011) at 201–233. Cf Mimi Brody, “Animal Research: A Call for Legislative Reform Requiring Ethical Merit Review” (1989) 13:2 *Harv Envtl L Rev* 423.

⁴⁴ See Blum, *supra* note 43 (describing the “regrettable substitution of a harmful chemical with a less-studied cousin” as being “like ‘a game of whack-a-mole,’ according to Donald Kennedy (former editor-in-chief of *Science* and former commissioner of the U.S. Food and Drug Administration)” at 1117).

⁴⁵ See Swan, *supra* note 21 at 178.

⁴⁶ See Cynthia J Hines et al, “Estimated Daily Intake of Phthalates in Occupationally Exposed Groups” (2011) 21:2 *J Expo Eci Env Epid* 133; Nguyen Minh ‘Tue et al, “Accumulation of Polychlorinated Biphenyls and Brominated Flame Retardants in Breast Milk from Women Living in Vietnamese E-waste Recycling Sites” (2010) 408:9 *Sci Total Environ* 2155.

⁴⁷ See Roni W Kobrosly et al, “Socioeconomic Factors and Phthalate Metabolite Concentrations among United States Women of Reproductive Age” (2012) 115 *Envtl Res* 11; Heather M Stapleton et al, “Serum PBDEs in a North Carolina Toddler

been found to exhibit particularly high levels of exposure to certain phthalates. Exposure to some BFRs has similarly been found to be highest in low-income communities of colour.⁴⁹ Although BFR and phthalate exposure occurs in the home, school, and workplace, these demographic exposure patterns reverberate with the longstanding environmental justice problem that marginalized communities are also disproportionately exposed to ambient environmental pollution, notably poor air quality.⁵⁰

Research on BFR and phthalate exposure demographics remains in its preliminary stages, and the explanatory variables that might account for differential exposure are not well understood. Researchers have hypothesized that culturally and economically influenced factors such as diet, housing stock, furniture quality, and use of personal care products may

Cohort: Associations with Handwipes, House Dust, and Socioeconomic Variables" (2012) 120 *Envtl Health Perspectives* 1049; cf Huguette Turgeon O'Brien et al, "Exposure to Toxic Metals and Persistent Organic Pollutants in Inuit Children Attending Childcare Centers in Nunavik, Canada" (2012) 46:8 *Envtl Sci & Tech* 4614.

⁴⁸ See Kobroly et al, *supra* note 47; Jung-Wan Koo et al, "The Association Between Biomarker-based Exposure Estimates for Phthalates and Demographic Factors in a Human Reference Population" (2002) 110:4 *Envtl Health Perspectives* 405.

⁴⁹ See Zota et al, "PBDEs", *supra* note 21; Stapleton et al, *supra* note 47; Gary Adamkiewicz et al, "Moving Environmental Justice Indoors: Understanding Structural Influences on Residential Exposure Patterns in Low-Income Communities" (2011) 101:S1 *Am J Pub Hlth* S238 at S241; Ami R Zota et al, "Elevated House Dust and Serum Concentrations of PBDEs in California: Unintended Consequences of Furniture Flammability Standards?" (2008) 42:21 *Envtl Sci & Tech* 8158; Melissa Rose et al, "PBDEs in 2-5 Year-old Children from California and Associations with Diet and Indoor Environment" (2010) 44:7 *Envtl Sci & Tech* 2648; Gayle C Windham et al, "Body Burdens of Brominated Flame Retardants and Other Persistent Organo-Halogenated Compounds and their Descriptors in US Girls" (2010) 110:3 *Envtl Research* 251. Conversely, exposure to some BFRs is higher among groups of higher socio-economic status. See Stapleton et al, *supra* note 47.

⁵⁰ See e.g. Dayna Nadine Scott, "Situating Sarnia: 'Unimagined Communities' in the New National Energy Debate" (2013) 25 *J Envtl L & Prac* 81; Zota et al, "PBDEs", *supra* note 21; Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge: Harvard University Press, 2011); Michael Buzzelli, *Environmental Justice in Canada: It Matters Where You Live* (Canadian Policy Research Network, 2008), online: <rcrpp.ca/documents/50875_EN.pdf>.

be significant.⁵¹ Many researchers working in this field have further suggested that, in order to fully understand the impact of these differential exposure levels on marginalized populations, it will be necessary to study the ways that phthalate and BFR exposure interacts with a number of social variables, including nutrition, time spent indoors, and stress levels associated with poverty or housing insecurity.⁵² Moreover, public health responses have often encouraged individuals and families to insulate themselves from BFR and phthalate exposure through purchasing decisions (i.e., “precautionary consumption”) and household maintenance—directions which present special obstacles for those without adequate economic resources and which have been shown to place disproportionate burdens on women in particular.⁵³ While the precise consequences of exposure remain uncertain (as will be discussed in the following subsection), the social dimensions of BFR and phthalate exposure suggest that any resulting effects are likely to compound existing social and economic cleavages.

C. UNCERTAIN EFFECTS

Both BFRs and phthalates have come under scrutiny in recent years, as scientific research has begun to illuminate possible health consequences associated with these chemicals. In adults, exposure to phthalates has been linked to infertility and to effects on the liver and kidneys, including increased risk of liver cancer.⁵⁴ Studies show that men in particular may be vulnerable to decreased respiratory function, obesity, insulin resistance, and

⁵¹ Kobroly et al, *supra* note 47 at 12; Zota et al, “PBDEs”, *supra* note 21; Adamkiewicz et al, *supra* note 49 at S241.

⁵² Zota et al, “PBDEs”, *supra* note 21 at 5692; Rachel Morello-Frosch et al, “Understanding the Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy” (2011) 30:5 H Aff 879.

⁵³ See Dayna Nadine Scott, Jennic Haw & Robyn Lee, “Wannabe Toxic Free? From Precautionary Consumption to Corporeal Citizenship” (2017) 26:2 *Envtl Pol* 322.

⁵⁴ Swan, *supra* note 21 at 177; Grady & Sathyanarayana, *supra* note 21 at 309 (citing Giovanna Tranfo et al, “Urinary Phthalate Monoesters Concentration in Couples with Infertility Problems” (2012) 213:1 *Tox Lett* 15).

effects on the thyroid, due to phthalate exposure.⁵⁵ In women, one recent study has associated the presence of phthalate metabolites in women's urine with low bone density and heightened incidence of osteoporosis.⁵⁶ Childhood exposure to various phthalates in household dust has been linked to asthma, wheezing, rhinitis and eczema.⁵⁷ BFRs may also have consequences for those exposed—including altered hormone levels,⁵⁸ earlier onset of puberty for girls,⁵⁹ and other effects on endocrine system functioning.⁶⁰ One recent meta-study of BFR research concluded that there is a “possible relationship between BFR exposure and serious health consequences, namely cancer, such as digestive system cancers and lymphoma, reproductive health effects, alteration in thyroid function, neurobehavioral and developmental outcomes in children, and diabetes.”⁶¹

The effects of BFR and phthalate exposure, moreover, may reach across generational lines. There is increasing scientific support for the theory that children, even grandchildren, of those exposed to BFRs and phthalates may incur health consequences. In part, this concern arises from studies on the effects of *in utero* and early childhood exposure. *In utero* exposure to phthalates, for example, has been associated with decreased testosterone production during the sex differentiation phase of fetal development, resulting in morphological differences in male genitalia, some of which may

⁵⁵ Swan, *supra* note 21 at 182–83.

⁵⁶ Kyoung-bok Min & Jin-young Min, “Urinary Phthalate Metabolites and the Risk of Low Bone Mineral Density and Osteoporosis in Older Women” (2014) 99:10 J Clin Endocr Metab E1997.

⁵⁷ Swan, *supra* note 21 at 182.

⁵⁸ Meeker et al, *supra* note 27 at 3428.

⁵⁹ Small et al, *supra* note 27 at 205 (citing Heidi Michels Blanck et al, “Age at Menarche and Tanner Stage in Girls Exposed in Utero and Postnatally to Polybrominated Biphenyl” (2000) 11:6 Epidemiology 641).

⁶⁰ Meeker et al, *supra* note 27 at 3426.

⁶¹ Kim et al, *supra* note 27 at 17.

affect reproductive health later in life.⁶² Similarly, elevated BFR levels in women have been associated with physical consequences for their male babies, including lower testosterone levels and testicle size,⁶³ as well as lower sperm production throughout adult life.⁶⁴ Females exposed to BFRs *in utero* and through their mothers' breast milk have been found to be more likely to experience spontaneous abortions as adults.⁶⁵ While the "exact mechanism" remains to be explained, scientists hypothesize that *in utero* exposure to certain BFRs may affect the development of the female reproductive system, including the fetal development of the primordial follicles which supply eggs throughout a woman's life.⁶⁶ Temporally and generationally speaking, the effects of BFR and phthalate exposure may be far-reaching, as health effects may continue to present multiple generations after exposure.⁶⁷

⁶² Grady & Sathyanarayana, *supra* note 21 at 308-09 (noting, in particular, evidence that phthalate exposure has been linked to reduced anogenital distance); Swan, *supra* note 21.

⁶³ Meeker et al, *supra* note 27 at 3428 (citing Meijer et al, "Influence of Prenatal Exposure to Selected Organohalogen Compounds on Infant Sexual and Neurological Development" (2008) 70:658 *Organohalogen Compounds J* 61).

⁶⁴ Meeker et al, *supra* note 27 at 3428 (citing animal studies).

⁶⁵ Small et al, *supra* note 27.

⁶⁶ *Ibid.*

⁶⁷ Matthew D Anway et al, "Epigenetic Transgenerational Actions of Endocrine Disruptors and Male Fertility" (2005) 308:5727 *Science* 1466; Jocelyn Kaiser, "Endocrine Disruptors Trigger Fertility Problems in Multiple Generations" (2005) 308:5727 *Science* 1391 at 1391; Sarah C Martens et al, "Multi-generational Effects of Polybrominated Diphenylethers Exposure: Embryonic Exposure of Male American Kestrels (*Falco sparverius*) to DE-71 Alters Reproductive Success and Behaviors" (2010) 29:8 *Envtl Toxicology & Chemistry* 1740; Kim J Fernic et al, "Changes in Reproductive Courtship Behaviors of Adult American Kestrels (*Falco sparverius*) Exposed to Environmentally Relevant Levels of the Polybrominated Diphenyl Ether Mixture, DE-71" (2008) 102:1 *Toxicological Sci* 171; Kim J Fernic et al, "Environmentally Relevant Concentrations of DE-71 and HBCD Alter Eggshell Thickness and Reproductive Success of American Kestrels" (2009) 43:6 *Envtl Sci & Tech* 2124; Timothy J Doyle et al, "Transgenerational Effects of Di-(2-ethylhexyl) Phthalate on Testicular Germ Cell Associations and Spermatogonial Stem Cells in Mice" (2013) 88:5 *Biol Reprod* 112 at 10.

The emerging research on “epigenetics” sheds further light on the intergenerational nature of possible exposure effects. Epigenetics describes a process by which bodies are able to “detect their environment and tag the DNA in ways that can be understood by the cells of subsequent offspring . . . [thus] allow[ing] cells to adapt very rapidly to their environment and [to] pass that adaptation on to future generations.”⁶⁸ Research into a number of chemicals including endocrine-disruptors like BFRs and phthalates is showing possible epigenetic—and thus intergenerational—effects related to various chronic conditions and illnesses such as cancer, diabetes and obesity, infertility, respiratory diseases, as well as allergies and neurodegenerative disorders such as Parkinson’s and Alzheimer’s disease.⁶⁹

Epigenetics research has emerged over the past 15 years to show how, through various biochemical processes, genes become “switched on and off” in response to changes in their environment. As an example, what scientists learned from studying the health later in life of children whose mothers experienced a famine while they were *in utero*, is that those children “are born with methyl groups stripped from several genes involved in growth and metabolic control, with the result that they are predisposed to conserving energy.”⁷⁰ All organisms, then, acquire subtle changes to the way in which their genes are expressed as they move through life. Some of these changes might be positive or neutral, and some can cause harm.⁷¹ Most

⁶⁸ Jade Johnston, “Lamarck Lives! ‘The Epigenetic Revolution in Environmental Health’ (16 January 2010), *Health & Environment* (blog), online: <healthandenvironmentblog.wordpress.com/issue-archive/epigenetics> (quoting Dr. Thea Edwards).

⁶⁹ Johnston, *supra* note 68 (citing Thea M Edwards & John Peterson Myers, “Environmental Exposures and Gene Regulation in Disease Etiology” (2007) 115:9 *Envl Health Perspectives* 1264 at 1264, online at <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1964917/>>).

⁷⁰ Lisa A Joss-Moore & Robert H Lane, “Epigenetics and the Developmental Origins of Disease: The Key to Unlocking the Door of Personalized Medicine” (2012) 4:5 *Epigenomics* 471.

⁷¹ Assessments of what constitutes a positive, neutral, or harmful effect may be deeply political and interlaced with the social context that affected individuals and communities must navigate. See e.g. Part IV.B, below.

relevant for our purposes are the data showing that exposures to environmental chemicals can alter DNA tagging patterns, including those effecting fertility, “[and] we don’t know what it would take to get the tags back to their original form”—or even whether such reversal would be desirable.⁷²

What scientists worry about, and what might be important for theorists of intergenerational justice, is the possibility for “mismatches between what has been pre-programmed during development and what is encountered in the real world.”⁷³ These changes include alterations in protein concentrations, cell metabolism and differentiation. They are not immediately identifiable in the “new generation”, but may lead to an increased disease burden later in life. Significantly, these effects will not impact everyone equally—not only because existing social stratification will structure exposures—but because some of these DNA tags may require a particular environmental or physiological trigger in order to manifest. Thus, we are confronted here with multiple levels of uncertainty—about the relationship between chemicals and contemporary bodies, between chemicals and future bodies, and about the unknown ways in which chemically-infused contemporary and future bodies interact with their environments and societies—environments and societies which, for future bodies at least, we can only imagine.

III. THE ORTHODOX ACCOUNT OF INTERGENERATIONAL JUSTICE

Prevailing western political and legal theories and institutions are not well-suited to addressing the effects of contemporary choices on persons who do not yet exist, or who may never come into being.⁷⁴ Philosophers in this tradition have long debated whether it is even coherent to view future

⁷² Johnston, *supra* note 68. On whether such changes are “desirable”, see *ibid.*

⁷³ “Epigenetics and the Developmental Origins of Disease” (12 October 2012) *Health & Environment* (blog), online: <healthandenvironmentblog.wordpress.com/2012/10/12/epigenetics-and-the-developmental-origins-of-disease>.

⁷⁴ On the challenges posed for democracy in particular, see *supra* note 6.

persons as objects of justice or moral consideration.⁷⁵ Our focus in this section is on the *legal* literature on intergenerational justice, which generally accepts (as we do) the assumption that we do owe moral and political obligations to future persons. The orthodox (legal) literature on intergenerational justice takes up a particular version of these obligations, grounded in the principles of “intergenerational equity” advanced by Edith Brown Weiss in her influential book, *In Fairness to Future Generations*.

The basic premise of intergenerational equity, as elaborated by Brown Weiss, is that the present generation is both entitled to benefit from the natural environment, and obligated to preserve the environment for future generations.⁷⁶ In elaborating this obligation, Brown Weiss draws on traditional liberal political theory, proposing that we might use a Rawlsian veil of ignorance to “assume the perspective of a generation that is placed somewhere along the spectrum of time, but does not know in advance where it will be located.”⁷⁷ But given the uneven distribution of toxic exposures and effects canvassed in the preceding section, how helpful is it to imagine any given generation as having a singular identifiable perspective or interest respecting the regulation of toxics? Feminist and relational theorists have long challenged Rawls’ veil of ignorance on the basis that there can be no unsituated perspective of the kind Rawls asks us to imagine; the realities

⁷⁵ A necessarily incomplete listing of the vast literature engaging these questions includes Derek Parfit, *Reasons and Persons* (New York: Oxford University Press, 1984); Wilfred Beckerman, “The Impossibility of a Theory of Intergenerational Justice” in Joerg Chet Trummel, ed, *Handbook of Intergenerational Justice* (Northampton, MA: Edward Elgar, 2006); Ernest Partridge, “On the Rights of Future Generations” in Donald Scherer, ed, *Upstream/Downstream: Issues in Environmental Ethics* (Philadelphia: Temple University Press, 1990). For an introductory overview of these philosophical debates, see Lukas H Meyer, “Intergenerational Justice” in Edward N Zalta, ed, *The Stanford Encyclopedia of Philosophy* (Summer 2016 Edition), <plato.stanford.edu/archives/sum2016/entries/justice-intergenerational>.

⁷⁶ Brown Weiss, *In Fairness*, *supra* note 7 at 21.

⁷⁷ *Ibid* at 24, citing John Rawls, *A Theory of Justice* (Cambridge, MA: Harvard University Press, 1971).

of embodied diversity cast doubt on Rawls' heuristic, even when it is confined to assessing outcomes in a single political moment.⁷⁸

Having identified “generations” as her core unit of analysis, Brown Weiss advocates “a minimum level of equality among generations,”⁷⁹ and elaborates three core “principles” of intergenerational equity:

First, each generation should be required to conserve the diversity of the natural and cultural resource base, so that it does not unduly restrict the options available to future generations in solving their problems and satisfying their own values, and should be entitled to diversity comparable to that of previous generations. This principle may be called “*conservation of options*.” Second, each generation should be required to maintain the quality of the planet so that it is passed on in no worse condition than the present generation received it, and should be entitled to a quality of the planet comparable to the one enjoyed by previous generations. This is the principle of “*conservation of quality*.” Third, each generation should provide its members with equitable rights of access to the legacy from past generations and should conserve this access for future generations. This is the principle of “*conservation of access*.”⁸⁰

Although we will criticize aspects of this formulation, we do not aim to undermine the common-sense appeal of these directives. If prevailing modes of governance throughout the Global North honoured these principles in practice, we would regard this as a significant improvement over the current state of affairs. Nonetheless, we are skeptical that an approach which treats intra- and intergenerational problems in separate silos will be capable of grounding the ethical and political orientation

⁷⁸ See e.g. Christine M Koggel, *Perspectives on Equality: Constructing a Relational Theory* (Lanham: Rowman & Littlefield, 1998); Carol Pateman, *The Sexual Contract* (Stanford: Stanford University Press, 1988); Susan Moller Okin, *Gender, Justice and the Family* (New York: Basic Books, 1989). For a discussion of intergenerational justice in the works of Rawls and other philosophers operating in the Rawlsian tradition, see David Heyd, “A Value or an Obligation? Rawls on Justice to Future Generations” in Axel Gosseries & Lukas H Meyer, eds, *Intergenerational Justice* (New York: Oxford University Press, 2009).

⁷⁹ Brown Weiss, *In Fairness*, *supra* note 7 at 24–25.

⁸⁰ *Ibid* at 38 [emphasis added].

necessary to restructuring social practices likely to cause short-term and long-term harms. To that end, we note that only the third of Brown Weiss's principles embraces "justice between generations *and between members of the same generation*."⁸¹ As such, it is the only principle that invites consideration of past, present, or future social conditions of difference and inequality.

Brown Weiss's model has already attracted criticism for the "relative underdevelopment of intra-generational equity."⁸² Catherine Redgwell has noted, as a quantitative matter, that Brown Weiss only directly engages with intra-generational equity concerns at seven points in the entire text of *In Fairness to Future Generations*.⁸³ Lynda Collins maintains that, while valid, this critique is not fatal to the project, since Brown Weiss's theory can be productively enriched by explicit incorporation of equity concerns.⁸⁴ For Collins, the primary difficulty arising from inadequate attention to intra-generational equity lies in the fact that "characterizing intra-generational equity as a *component* of intergenerational equity obscures the real potential for conflict between the present and future."⁸⁵ Brown Weiss does appear to deal somewhat perfunctorily with the possibility of such conflict. In one summary of her theory, Brown Weiss notes first that such conflicts may be illusory since "poverty is a major cause of ecological degradation," and that "meeting the basic needs of the poor" is essential to ensuring that "they will have both the desire and ability to fulfil their intergenerational obligations to conserve the planet."⁸⁶ In cases of true

⁸¹ Edith Brown Weiss, "Intergenerational Equity: A Legal Framework for Global Environmental Change" in Edith Brown Weiss, cd, *Environmental Change and International Law: New Challenges and Dimensions* (Tokyo: United Nations University Press, 1992) 385 at 405 [emphasis added] [Brown Weiss, "Intergenerational Equity"].

⁸² Lynda M Collins, "Revisiting the Doctrine of Intergenerational Equity in Global Environmental Governance" (2007) 30:1 Dal LJ 79 at 116.

⁸³ See Catherine Redgwell, *Intergenerational Trusts and Environmental Protection* (Manchester: University Press, 1999) at 109, n 208.

⁸⁴ Collins, *supra* note 82 at 116.

⁸⁵ *Ibid.*

⁸⁶ Brown Weiss, "Intergenerational Equity", *supra* note 81 at 398.

conflict, Brown Weiss remarks only that “we need to develop appropriate mechanisms and allocate sufficient resources to maximize the ability to both “alleviate poverty as quickly as possible” and “protect the health of the planet for future generations.”⁸⁷ More generally, Brown Weiss does not appear to move beyond generalized exhortations that “all members of the present generation are entitled to equitable access to the legacy” of the environment, and the insistence that “[i]ntragenerational justice requires wealthier communities to assist impoverished ones in realizing such access.”⁸⁸ There is no suggestion in Brown Weiss’s text that the experiences of the “impoverished” should be solicited or addressed (beyond what is required for the purpose of resource conservation), or that we ought to question or reform the underlying structures which produce the inequalities she observes.⁸⁹

Law and development scholar Graham Mayeda develops a related critique of Brown Weiss’s approach. At the heart of Mayeda’s challenge to Brown Weiss is a concern that her focus on equality between “generations” is “essentialist”:

This is because the principle of inter-generational equity denies the complexity of particular historical relationships. . . . It does so by conceiving sustainability in terms of the relationship between abstract groups, such as generations, resulting in a concept of “equity” that is formalistic, being based solely on the idea of the equitable distribution of natural resources, and which reinforces rather than challenges present distributions of goods.⁹⁰

⁸⁷ *Ibid.*

⁸⁸ Brown Weiss, *In Fairness*, *supra* note 7 at 28.

⁸⁹ For a similar criticism, see Ruth Gordon, “Unsustainable Development” in Shawkat Alam et al, eds, *International Environmental Law and the Global South* (New York: Cambridge University Press, 2015) 50 (asserting that “the concept of sustainable development was conceived in large part to engage the global South in ecological discourse, not to fundamentally question global North understandings of development and economic growth” at 62).

⁹⁰ Graham Mayeda, “Where Should Johannesburg Take Us?: Ethical and Legal Approaches to Sustainable Development in the Context of International Environmental Law” (2004) 15:1 *Colo J Int’l Envtl L & Pol’y* 29 at 49–50. See also Carmen G

While Mayeda's focus is on the differing circumstances of richer and poorer nations,⁹¹ his argument remains salient in respect of domestic environmental policy choices within diverse contemporary polities. Even setting aside Collins' concerns regarding possible conflicts between the interests of present and future generations, Mayeda's critique points to the thorny reality that "past", "present", and "future" are each themselves constituted by conflicts and complexities—all of which are deeply interlaced within and across temporal moments.

Demographic patterns of BFR and phthalate exposure are a case in point. The social conditions—housing stock, air quality, education, political voice, and financial access to "safe" consumer choices—which have likely contributed to differential exposure patterns are profoundly influenced by historical economic and social conditions of inequality.⁹² In the present moment, those subject to heightened exposure necessarily experience any resulting effects (consciously or not) as part of a broader constellation of social, economic, and environmental experiences; exposure effects that may arise in future generations will be similarly shaped by the deep and immediate past, and the specific social and material circumstances of future lives and communities. The possible harms of exposure—and, consequently, the most productive forms of prevention and redress—will necessarily be tied to broad social relationships associated with race, gender, ability, and social and economic stratification. These problems thus call for responses grounded in an understanding of human persons and communities as embodied, diverse, and constituted by their social, historical, ecological, and material circumstances. The balance of this paper will seek to elaborate a theory capable of grounding such responses.

Gonzalez, "Environmental Justice and International Environmental Law" in Shawkat Alam et al, eds, *Routledge Handbook of International Environmental Law* (Abingdon: Routledge, 2013).

⁹¹ Mayeda, *supra* note 90 at 57.

⁹² See e.g. Pulido, *supra* note 17.

IV. TOWARD A RELATIONAL THEORY OF INTERGENERATIONAL JUSTICE

Scholars operating in a relational theoretical mode have endeavoured to bring attention to the embodied, affective, and social dimensions of problems ranging from domestic violence,⁹³ to education policy,⁹⁴ to health care.⁹⁵ A central catalyst for the development of relational approaches has been the perception that traditional liberal legalism is founded on a fundamentally mistaken understanding of the human person as an “abstracted, disembodied, rational, universal rights bearing, contracting, possessive individual.”⁹⁶ In this regard, relational theory may be understood as part of a broader set of intellectual projects that have sought to challenge “the liberal humanist construction of a universal, coherent, and self-constituting subject.”⁹⁷ Relational theorists instead urge that interests, aspirations, and capacities are both *forged in relation to* other persons, and *realized through relations with* other persons.⁹⁸ These relations include interpersonal relationships such as those with family, friends, or co-workers; as well as institutional or structural relationships such as those defined by

⁹³ Jennifer Nedelsky, *Law's Relations: A Relational Theory of Self, Autonomy, and Law* (New York: Oxford University Press, 2011) ch 5 at 200ff.

⁹⁴ Martha Minow, *Making All the Difference: Inclusion, Exclusion, and American Law* (Ithaca: Cornell University Press, 1990).

⁹⁵ Sue Sherwin, “A Relational Approach to Autonomy in Healthcare” in Elisabeth Boetzkes & Wilfrid J Waluchow, eds, *Readings in Health Care Ethics* (Peterborough: Broadview Press, 2000) 69 at 69.

⁹⁶ Roxanne Mykitiuk, “Fragmenting the Body” (1994) 2:1 *Austl Fem LJ* 63 at 79. See also Nedelsky, *supra* note 93 ch 4 at 158ff; Robert Leckey, *Contextual Subjects: Family, State and Relational Theory* (Toronto: University of Toronto Press, 2008) (setting out the relational critique, as well as arguments that relational theorists may present an unfair caricature of liberal legalism at 8–9).

⁹⁷ Leckey, *supra* note 96 at 3.

⁹⁸ Jennifer J Llewellyn & Jocelyn Downie, “Introduction” in Jennifer J Llewellyn & Jocelyn Downie, eds, *Being Relational: Reflections on Relational Theory and Health Law* (Vancouver: University of British Columbia Press, 2012) 1 at 4.

race, capitalism, or the bureaucratic state.⁹⁹ Two crucial consequences of this relational ontology, which will be explored in turn below, are (1) an acceptance that “autonomy” is a value or capacity forged in relation with others, not an exercise of total “control” by a separate self; and (2) an awareness that individual perspectives are deeply shaped by social and embodied determinants, such that there is no such thing as an “unsituated” standpoint—the views and experiences of actual diverse persons and communities must be solicited in order to adequately comprehend social choices and generate appropriate regulatory responses.

This relational vision of persons as inherently situated, embodied, interconnected, and interdependent has offered a much-needed corrective to the unsituated, disembodied, isolated, and freely-contracting individual of liberal theory. But more work needs to be done to elaborate a relational theory that poses an equivalent challenge to the identifiable, separable, undifferentiated “generation” of the orthodox intergenerational justice literature. Existing relational literature already frequently invokes imagery and policy analyses that allude to social interconnections over time, making

⁹⁹ Nedelsky, *supra* note 93 at 4. Of course, the body of relational theory we cite here is not the first or the only intellectual tradition that has emphasized interconnection and relationship as central tenets. For example, Gordon Christie notes that:

[I]ndividuals in Aboriginal societies are seen as interwoven into intricate webs of relationships, the self being defined in its relation to others . . . individuals are conceptualized in Aboriginal societies as *nodes* in these webs, as relatively *fixed and determined beings* connected by strands of the web. The identity of these individuals (and the various communities they collectively comprise) is provided by the responsibilities they have, which work to weave the web of which they are parts. There are, quite simply, things the individual *must* do, responsibilities to family, clan and community that *must* be respected and that *must* lead to action. Responsibilities act to define a core of the identity of the individual, just as the existence of a society centred around responsibilities defines the identity of Aboriginal communities.

Gordon Christie, “Law, Theory and Aboriginal Peoples” (2003) 2:1 *Indigenous LJ* 67 at 110–11 [emphasis in original]. The Indigenous legal theory Christie describes differs in important respects from the relational theory set out here—for example, in describing persons as “nodes” or “fixed and determined beings” rather than (as relational theorists would have it) as continuously constituted and reconstituted by their relationships (*supra* note 98 and accompanying text); and in describing persons as bound by things which they “must” do, as opposed to the relational conception of rights and responsibilities as being open to constant social contestation and redefinition (*infra* note 135 and accompanying text).

this body of scholarship a fruitful starting point for theorizing intergenerational justice. One of Jennifer Nedelsky's most compelling and personal challenges to the liberal vision of the singular, bounded self is her experience of interconnection with her own young and unborn children.¹⁰⁰ Moreover, the lives and choices of previous generations are consistently present in the relational construction of contemporary problems, and the common relational focus on root structural change implies a prescriptive vision concerned with the interests of future persons.¹⁰¹ But the problems posed by everyday toxics require a more focused and deliberate reckoning with the puzzles of intergenerational justice than these treatments offer.

The following sections explore the contributions that two bodies of scholarship might make in developing a relational account of intergenerational justice. First, we explore how the problem of everyday toxic exposure calls on us to deepen the relational critique of autonomy-as-control. Drawing on recent scholarship in *material feminism*, we argue that everyday toxic exposure demands that relational theory expand the sphere of "relationships" conditioning autonomy to include complex and unpredictable forms of "agency" exhibited by matter, ecologies, and chemical flows. Second, we consider the implications of the relational mandate to consider diverse perspectives as applied on an intergenerational scale wherein future persons and communities cannot express their experiences directly. To this end, we suggest that engaging diverse contemporary perspectives on futurity is a crucial component of relational intergenerational justice. We may temper the unknowability of future persons by developing more relational accounts that consider diverse, situated contemporary perspectives as to the values and priorities that ought to shape our obligations through time. To this end, we take the literature on *critical disability studies* as a guide, illuminating the intergenerational dimensions of the imperative to foster social norms that are welcoming of embodied difference. As we consider the possible

¹⁰⁰ Nedelsky, *supra* note 93 at 111.

¹⁰¹ See generally Nedelsky, *supra* note 93; Colleen Sheppard, *Inclusive Equality: The Relational Dimensions of Systemic Discrimination in Canada* (Montreal & Kingston: McGill-Queen's University Press, 2010).

physiological and morphological effects of everyday toxics, critical disability scholarship calls on us to develop an account of possible harms that recognizes the ways that social relationships operate to determine which exposure effects are felt as harms, and the gravity of those felt harms.

A. MATERIAL AND ECOLOGICAL RELATIONS: AUTONOMY WITHOUT CONTROL

Because of the central role that concepts of autonomy and control have played in liberal legal theory, relational theorists have made it a principal concern to reconceptualise autonomy in relational terms. Autonomy defined by the liberal norm of “independence” is rejected as both “impossible and undesirable”, as well as demeaning to persons with more “visible sorts of needs for assistance”.¹⁰² Instead, relational theorists have sought to understand autonomy as a quality that develops in and through relations with others, with the “central question” being “how to structure relationships so that they foster rather than undermine autonomy.”¹⁰³ In this regard, special attention must be paid to “social and political structures, especially sexism and other forms of oppression, on the lives and opportunities of individuals.”¹⁰⁴ Rather than conceptualizing autonomy as a

¹⁰² Susan Sherwin, “Relational Autonomy and Global Threats” in Jennifer J Llewellyn & Jocelyn Downie, eds, *Being Relational: Reflections on Relational Theory and Health Law* (Vancouver: University of British Columbia Press, 2011) 13 at 14. See also Catriona Mackenzie & Natalie Stoljar, “Introduction: Autonomy Refigured” in Catriona Mackenzie & Natalie Stoljar, eds, *Relational Autonomy: Feminist Perspectives on Autonomy, Agency, and the Social Self* (New York: Oxford University Press, 2000) 3 at 3.

¹⁰³ Nedelsky, *supra* note 93 at 98.

¹⁰⁴ Carolyn McLeod & Susan Sherwin, “Relational Autonomy, Self-Trust, and Health Care for Patients who are Oppressed” in Catriona Mackenzie & Natalie Stoljar, eds, *Relational Autonomy: Feminist Perspectives on Autonomy, Agency and Social Self* (New York: Oxford University Press, 2000) 259 at 260. See also Martha Minow & Elizabeth V Spelman, “In Context” (Article delivered at the Symposium on the Renaissance of Pragmatism in American Legal Thought, September 1990), 63:6 S Cal L Rev 1597 (asserting that “the demand to look at the context often means a demand to look at the structures of power, gender, race, or class relationships” at 1651). These and other examples are cited in Leckey’s survey of relational theory. See Leckey, *supra* note 96 at 17–18.

fixed characteristic of persons, autonomy is cast as a capacity that can be developed or thwarted by an individual's specific circumstances.¹⁰⁵ This reconceptualization of autonomy unsettles the widespread association between "autonomy" and "control", since

[w]hen we focus on the relationships that make autonomy possible, we must recognize that we do not choose many of the relationships most central in developing our capacity for autonomy. . . . [W]e are forced to recognize both the interdependence that makes autonomy possible and our lack of control over it.¹⁰⁶

Legal scholarship in relational theory has demonstrated that social relationships, both interpersonal and structural, can condition the autonomy of individuals, but it has not explored in depth the way that ecological or material relations might do so.¹⁰⁷ Material feminists have proposed that chemicals moving through environments might be best understood as "actants" exhibiting a form of "agency", behaving in unpredictable ways that shape and condition our autonomy—in effect, that

¹⁰⁵ See e.g. Sherwin, *supra* note 102 at 13, 26; and Mackenzie & Stoljar, *supra* note 102 at 22.

¹⁰⁶ See Nedelsky, *supra* note 93 at 278, 292. Nedelsky does not deny the importance of "consciously formulating intentions and hopes and trying to shape one's life accordingly", but rather believes that the language of "control" is not an optimal descriptor for such autonomy, since it fails to "engage with difference in a way that advances equality." *Ibid* at 292 and 278.

¹⁰⁷ But see Harris, *supra* note 1 at 114 (describing the "environmentally embedded" subject in the context of "vulnerability" theory). Indigenous scholarship in a range of fields including sociology and anthropology has long emphasized the "embeddedness of humans and animals in shared social, cultural, political, and economic relationships", as well as recognized agency for the 'more-than-human' world: Zoe Todd, "Fish Pluralities: Human-Animal Relations and Sites of Engagement in Paulatuuq, Arctic Canada" (2014) 38:1-2 *Cultures Inuit, Gouvernance et Cosmopolitiques* 217 at 232. Furthermore, this relationality has been recognized as a fundamental characteristic of the Indigenous legal orders that are living and practiced today, despite their subjugation to Canadian colonial law. See e.g. Sarah Hunt, "Ontologies of Indigeneity: The Politics of Embodying a Concept" (2014) 21:1 *Cultural Geographies* 27; John Borrows, "Living Between Water and Rocks: First Nations, Environmental Planning, and Democracy" (1997) 47:4 *U'ILJ* 417.

our relevant relations are not just with each other, but also with and through the material world. Because these materials may operate in ways that impact the possible descendants of those exposed, the legal subject becomes cognizable as a link in a chain of bodies that spans generations—as at once a moral end and a vessel for chemical intensities and flows.¹⁰⁸ Existing relational frameworks capture structural relations that include broad institutional and economic forces, and our modified version would further incorporate ecological realities and broader time horizons so as to account for social and “material systems in their complex interlocking totality.”¹⁰⁹

Material feminists pursue a range of scholarly and political commitments, but significantly for our purposes, share a core focus on the dynamism and social relevance of “things themselves.”¹¹⁰ In many ways,

¹⁰⁸ See Jessica Eisen, “Beyond Rights and Welfare: Democracy, Dialogue and the Animal Welfare Act” 51:1 Mich JL Reform [forthcoming in 2018] (on the relational imperative to view persons as both means and ends).

¹⁰⁹ Elisabeth Grosz, *The Nick of Time: Politics, Evolution and the Untimely* (Durham: Duke University Press, 2004) at 198. Nedelsky draws on scientific approaches to “the natural world”—for example “genetic mutation”—as constituting a “completely different context” that nonetheless illuminates the social phenomena she describes. See Nedelsky, *supra* note 93 at 57. Elsewhere, Nedelsky describes the networks and behaviours of material actants as intersecting with social relationships, but primarily treats scientific accounts of these networks and behaviours as sources of useful metaphors for the social relationships that form her primary area of inquiry: Jennifer Nedelsky, “Relational Autonomy and the Trap of Social Determinism: Perspectives from Science and Theology” (unpublished manuscript, on file with the authors). We want to extend relational theory by suggesting that genetic mutations and other phenomena of the natural (and synthetic) world are not “completely different”, nor simply a source of metaphor for social relations, but are rather core dimensions of social life and relationship.

¹¹⁰ See generally Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2004). Note that the “material feminist” literature to which we refer is a distinct field from the Marxist “materialist feminism”. Stacy Alaimo and Susan Helman explain:

It is important to distinguish what we are calling ‘material feminism’—which is emerging primarily from corporeal feminism, environmental feminism, and science studies—from ‘materialist’ feminism, which emerges from, or is synonymous with Marxist feminism. Even as many of the theorists of what we are calling ‘material feminism’ have been influenced by Marxist

material feminists writing in this mode are reacting to what they view as an erasure of the active materiality of our world.¹¹¹ The concern is that much feminist analysis occurs at the level of “culture,” “language,” and “discourse,” working to “foreclose attention to lived, material bodies”; as well as the biophysical and ecological environments in which we are immersed and embedded.¹¹² Approaches which treat culture as distinct from nature limit us in that they apply “a framework that situates . . . the environment, outside of human and social interactions”.¹¹³

It would overstate the case to suggest that relational theorists have so far treated social and environmental interactions in completely discrete silos.¹¹⁴

theory, post-Marxism, and cultural studies, their definition of ‘materiality’ is not, or is not exclusively, Marxist.

Stacy Alaimo & Susan Hekman, “Introduction: Emerging Models of Materiality in Feminist Theory” [Alaimo & Hekman, “Introduction”] in Stacy Alaimo & Susan Hekman, eds, *Material Feminisms* (Bloomington: Indiana University Press, 2008) 1 [Alaimo & Hekman, *Material*] at 18, n 3. There are commonalities between work in the material feminist mode and “new materialisms” as well. Jane Bennett elaborates that, “[i]t is important to follow the trail of human power to expose social hegemonies (as historical materialists do). But my contention is that there is also public value in following the scent of a [non-human], thingly power, the material agency of natural bodies and technological artifacts.” Bennett, *supra* note 110 at xiii.

¹¹¹ See Stacy Alaimo, “Trans-Corporeal Feminisms and the Ethical Space of Nature” in Alaimo & Hekman, *Material*, *supra* note 110 at 237 [Alaimo, “Trans-Corporeal Feminisms”]; Nancy Tuana, “Viscous Porosity: Witnessing Katrina” in Alaimo & Hekman, *Material*, *supra* note 110, 188 at 188.

¹¹² Alaimo & Hekman, “Introduction,” *supra* note 110, 1 at 1–4. One of the earliest and most consistent feminist critics of the postmodern trend in feminism has been Catharine MacKinnon. See e.g. MacKinnon, “Points Against Postmodernism”, (2000) 75:3 Chicago-Kent L Rev 687. The material feminist literature differs from MacKinnon in its assessment of the usefulness of postmodern analysis. See e.g. Alaimo & Hekman, “Introduction,” *supra* note 110 (insisting that the material feminist critique of postmodernism does not entail “a return to modernism”, but rather seeks “a deconstruction of the material/discursive dichotomy that retains both elements without privileging either” at 6).

¹¹³ Scott, Haw & Lee, *supra* note 53 at 11.

¹¹⁴ See e.g. Nedelsky, *supra* note 93 (“I see a link between the [dominant conception of a] disembodied subject and one of the most fundamental and neglected relationships, that of human beings to earth and to the other beings who inhabit it with us. . . . In an

Existing relational accounts, however, have not seriously engaged with the ways in which social relationships include, and are mediated through, physical elements from the micro (chemicals) to the macro (environments, including toxic environments). Material feminists offer some helpful tools for such an inquiry, as they begin with the position that, just as individuals cannot pre-exist their sociality, they cannot pre-exist ecological or material relationality. As Jane Bennett explains, “[t]his material vitality is me, it predates me, it exceeds me, it postdates me”.¹¹⁵ A body is always “modulating with its environments”.¹¹⁶ The living and the material, subjects and objects, the social and the natural are always mutually co-constituting.¹¹⁷

As we have seen in respect to BFRs and phthalates, the very presence (and the specific concentrations) of these toxics in the environment is “influenced by social dynamics and technology, and by economic and political factors favouring the industries that produce and emit them. Thus, political and social factors have a direct role in the material (i.e., chemical) composition of the environment, and accordingly, our material bodies”.¹¹⁸ Nancy Tuana, for example, has described how phthalates move from the PVC manufacturing plants in Louisiana into the flesh of the workers and nearby residents, demonstrating the ongoing, continual exchange between material bodies and the environment.¹¹⁹ Phthalates are released into air and leach from PVC plumbing into water; they make their way across membranes and into bodies, tissues, and cells; and they bind to receptors, mimicking hormones and triggering metabolic processes. In this way, the

optimal relational approach, our place in the ecology of earth would be recognized as a relationship that shapes and is shaped by all others” at 34).

¹¹⁵ Bennett, *supra* note 110 at 120.

¹¹⁶ Milla Tiainen, Katve-Kaisa Kontturi & Ilona Hongisto, “Framing, Following, Middling: Towards Methodologies of Relational Materialities” (2015) 21:2 Cultural Studies Rev 14 at 15.

¹¹⁷ See Bennett, *supra* note 110 (“[a]n actant never really acts alone. Its efficacy or agency always depends on the collaboration, cooperation, or interactive interference of many bodies and forces” at 21).

¹¹⁸ See Scott, Haw & Lee, *supra* note 53 at 332.

¹¹⁹ Tuana, *supra* note 111 at 200.

escaping phthalate molecules lead to specific, uninvited material changes to people's bodies with real consequences for their health and well-being, and that of their possible future children. This would also be true for BFRs, which typically enter bodies through inadvertent ingestion, as we gather those molecules under our fingernails from our computers and house dust, and then put our hands to our mouths. BFRs ultimately collect and are stored in our fatty tissues. Because they bioaccumulate in the body, "BFRs can be thought to create a fleshy material archive of one's social location, practices, and movements. Not only are bodies embedded in social contexts and structures, but the social is also embedded, literally, in material bodies".¹²⁰

Accounting for the agentic qualities of matter gives rise to a profound iteration of a problem at the heart of relational theory: confronting cosmological and epistemological indeterminacy—and the attendant lack of "control" over environments and material actors—with "receptivity, acceptance, attentiveness, and creative responsiveness", rather than defeatism and nihilism.¹²¹ With reference to the body, Nedelsky notes that "[w]e did not create and cannot ultimately control our bodies, just as we did not create and cannot control the world we live in. But we are responsible for our bodies (and our world)".¹²²

As the integrity of boundaries between human bodies and the material world destabilizes, conventional understandings of human *agency* and material *absence-of-agency* come into question.¹²³ Liberal theory takes the individual human person to have agency, while elements of the non-human,

¹²⁰ Scott, Haw & Lee, *supra* note 53 at 333.

¹²¹ Nedelsky, *supra* note 93 at 288.

¹²² *Ibid* at 279–80.

¹²³ In much of the material feminist literature, the "human" and "non-human" are transposed, with no serious attention to where animals fit in to the world they describe. Animals are, of course, affected by toxics, often in devastating ways. See Valerie Brown, "Causes for Concern: Chemicals and Wildlife", *World Wildlife Fund* (December 2003), online: <d2ouvy59p0dg6k.cloudfront.net/downloads/causesforconcern.pdf>. Our political and legal systems have proven notoriously deficient in protecting animal interests in this regard, as in others. See generally Bisgould, *supra* note 43.

bio-physical, or material world are seen as non-agentic; they are presumed to passively follow natural “laws” or be acted upon by humans.¹²⁴ But material feminists argue that even matter is not always inert and that human corporeality continuously interacts with the materiality of the environment, a phenomenon that Stacy Alaimo refers to as “trans-corporeality”.¹²⁵ Thus, agency is not thought to be exclusive to human or even living beings, but must also be applied to the intra-active and reactive, responsive materiality of things and environments. As Bennett says, “[t]his understanding of agency does not deny the existence of that thrust called intentionality, but it does see it as less definitive of outcomes.”¹²⁶ Circling back to the relational theoretical critique of autonomy-as-control in the context of social relationships, the insights of feminist materialists call upon us to confront the task of defining politically desirable autonomy in a world where subjects are in a state of constant interpenetration with agentic materials that often seem to defy our immediate perception, let alone “control”.

The idea of a “toxic trespass”, for example, posits that synthetic chemicals now routinely and freely cross bodily boundaries and enter the cells, tissues, and organs of people living in the industrialized world.¹²⁷ Scientists trying to popularize understandings of endocrine disruptors often describe these synthetic chemicals as “messengers” that mimic hormone action by “moving through the body, picking up ‘packages’ from the

¹²⁴ Alaimo, “Trans-Corporeal Feminisms”, *supra* note 111. The failure to attribute even the most basic justiciable interests to animals or environments may be seen as flowing from some version of this liberal premise. Cf. Laurence H. Tribe, “Ways Not to Think About Plastic Trees: New Foundations for Environmental Law” (1974) 83:7 Yale LJ 1315. For this reason, some efforts to include animals in the legal category of “persons” have focused on proving that animals are capable of relevant forms and degrees of “autonomy”. See e.g. Steven Wise, *Rattling the Cage: Toward Legal Rights for Animals* (Cambridge, MA: Perseus Books, 2000); Steven Wise, *Drawing the Line: Science and the Case for Animal Rights* (Cambridge, MA: Perseus Books, 2002).

¹²⁵ Alaimo, “Trans-Corporeal Feminisms”, *supra* note 111 at 238.

¹²⁶ Bennett, *supra* note 110 at 32.

¹²⁷ See *Toxic Trespass*, 2007, DVD (Ottawa: National Film Board, 2007); Helen Pearman Ziral & Dorothy Goldin Rosenberg, “Help! Our Toxic Environment is Killing Our Children” (2011) 2:1 J Motherhood Initiative 102.

'outside', delivering them to receptive agents [on the 'inside'], igniting and transforming productive processes".¹²⁸ Other times a lock-and-key metaphor is employed. All three of these images (the trespasser, messenger, and lock-and-key) evoke a misleading sense of boundary between body and environment—albeit a boundary which may be breached. The reality, also invoked by these same metaphors, is that "bodies are in dynamic relationships of exchange with environments, and constantly in flux."¹²⁹ As Max Liboiron says, synthetic hormones actually "*participate in* the body's endocrine, or hormone, system".¹³⁰ In coming to realize that uninvited changes to our endocrine systems by everyday toxics have "real, tangible, material consequences for bodies",¹³¹ and corresponding effects on health and reproduction, it becomes obvious that these exposures could impact our abilities to work, thrive, reproduce, and choose, now and in the future. Thus, as much as these synthetic chemical actors might lack intention, and their precise movements may be unpredictable and beyond anyone's control, we have to admit that the movements of these "enigmatic, active Others"¹³² are conditioning the agency of human actors.

B. PERSPECTIVES ON FUTURITY: WELCOMING BODILY DIVERSITY

A core methodological and epistemological imperative supporting relational theory's more social vision of autonomy is the insistence that theory and policy must be grounded in dialogue between diverse persons and groups, each of which brings to bear their own unique perspectives.

¹²⁸ Dayna Nadine Scott, "Pollution and the Body Boundary: Exploring Scale, Gender and Remedy" in Janice Richardson & Frika Rackley, eds, *Feminist Perspectives on Tort Law* (New York: Routledge, 2012) at 67.

¹²⁹ Scott, Haw & Lee, *supra* note 53 at 332.

¹³⁰ Max Liboiron, "Plasticizers: A Twenty-First Century Miasma" in Jennifer Gabrys, Gay Hawkins & Mike Michael, eds, *Accumulation: The Material Politics of Plastic* (New York: Routledge, 2013) at 140 [emphasis added].

¹³¹ Dayna Nadine Scott, "'Gender-Benders': Sex and Law in the Constitution of Polluted Bodies" (2009) 17:3 *Fem Leg Stud* 241 at 256 [Scott, "'Gender Benders'"].

¹³² Catc Sandilands, *The Good-Natured Feminist* (Minneapolis: University of Minnesota Press, 1999) 181.

This can encompass Martha Minow's effort to "solic[ι]t challenges from the perspective of those labeled different",¹³³ as well as Christine Koggel's call to foster "genuine interactions, ones in which the dominant and powerful recognize the validity and value of the different perspectives" of oppressed persons.¹³⁴ Rights, values, and social norms are all understood by relational theorists to be social choices, each of which in turn shapes our opportunities for autonomous choice across a range of interpersonal and institutional contexts.¹³⁵ The relational route to justice thus requires that particular voices—especially those that have been traditionally overlooked or marginalized—be included in democratic dialogues regarding the policies, laws, and rights that shape people's lives and opportunities.

At first blush, this may seem to pose an insurmountable challenge when applied to persons who do not yet exist, or may never come into being. The orthodox intergenerational justice literature is replete with references to the unknowability of future persons and communities, and the suggestion that what is in fact known or knowable about future generations might be limited only to the "objectively" discernible basic needs of biological persons.¹³⁶ But the relational insight that all perspectives are situated casts doubt on the prospects for such objectivity and demands more careful consideration of the tools at our disposal for understanding future persons, their likely relationships with each other, and with past and contemporary communities and individuals.

While we may be unable to seek the direct input of future persons, this does not limit our conceptions of intergenerational justice to bare claims

¹³³ Minow, *supra* note 94 at 112.

¹³⁴ Koggel, *supra* note 78 at 193.

¹³⁵ Nedelsky, *supra* note 93 at 65, 249; Koggel *supra* note 78 at 202–03; Minow, *supra* note 94 at 309.

¹³⁶ Cf. Brown Weiss, *In Fairness*, *supra* note 7 at 39 (positing that "[i]t would be difficult, if not impossible, to predict [the preferences of future generations], either because their values, and hence their preferences, will change over time, or because technological developments may change the options available to them upon which they will base their preferences", thus limiting intergenerational obligations to a minimal core of ensuring "a reasonably secure and flexible natural and cultural resource base for future generations and a reasonably decent and healthy human environment for the present generation.")

about the objective interests of future persons. Instead, a relational account of intergenerational justice demands that we solicit diverse past and contemporary perspectives on futurity, and take these seriously in defining our obligations to future persons and communities. The term “*futurity*” often appears in the intergenerational justice literature without explicit definition.¹³⁷ The Oxford Dictionary of Environment and Conservation offers a spare, apolitical definition: “[i]n the future, yet to come.”¹³⁸ In other fields of social discourse, however, the term “*futurity*” is imbued with the particular hopes and fears of diverse constituencies, and is deeply interwoven with social and material forces past and present. Andrew Baldwin summarizes that “the future is rendered knowable through specific practices (i.e., calculation, imagination, and performance) and, in turn, intervenes on the present through . . . anticipatory logics.”¹³⁹ He elaborates that “[f]uturity is also an important feature of the affective dimensions of daily life” including “fear” and “hope.”¹⁴⁰ On such accounts, what is “[i]n the future, yet to come” is not an empty signifier of passing hours, days, and years, but is instead heavy with specific anxieties and expectations relating

¹³⁷ See e.g. Dobson, *supra* note 10.

¹³⁸ Chris Park & Michael Allaby, *Dictionary of Environment and Conservation*, 3d ed (New York: Oxford University Press, 2017), *sub verbo* “*futurity*”. Cf Gregory Kavka, “The Futurity Problem” in RI Sikora & Brian Barry, eds, *Obligations to Future Generations* (Philadelphia: Temple University Press, 1978) 186 at 187 (using the phrase “the Futurity Problem” to describe the abstract question of whether “the interests of *future* strangers [are] worthy of equal consideration with those of presently existing strangers?” [emphasis in the original]).

¹³⁹ Andrew Baldwin, “Whiteness and Futurity: ‘Towards a Research Agenda’” (2012) 36:2 *Progress Human Geography* 172 at 173, citing Ben Anderson, “Preemption, Precaution, Preparedness: Anticipatory Action and Future Geographies” (2010) 34:6 *Progress Human Geography* 777.

¹⁴⁰ Baldwin, *supra* note 139 at 173, citing Rachel Pain, “Globalized Fear? ‘Towards an Emotional Geopolitics’” (2009) 33:4 *Progress in Human Geography* 466; Ben Anderson, “Becoming and Being Hopeful: Towards a Theory of Affect” (2006) 24:5 *Environment and Planning D: Society and Space* 733; Ben Anderson & Adam Holden, “Affective Urbanism and the Event of Hope” (2008) 11:2 *Space & Culture* 142.

to the human and more-than-human world.¹⁴¹ This more political understanding of “futurity” has been particularly well developed in the contexts of settler colonial critique and queer theory,¹⁴² though, as we will see, it resonates with the broader relational insight that problems and solutions are best understood through processes of engagement among diverse constituencies.

The orthodox account of intergenerational justice rarely delves into the rich literature on “slow violence”, harm, and justice over time that has been developed by scholars of environmental justice, Third World Approaches to International Law (TWAAIL), and others concerned with the temporal dimensions of persistent global inequality.¹⁴³ Nor does the orthodox

¹⁴¹ See e.g. Katharine Dow’s fieldwork on the particular anxieties experienced by environmental advocates in Spey Bay, Scotland: Katharine Dow, “What Gets Left Behind for Future Generations? Reproduction and the Environment in Spey Bay, Scotland” (2016) 22:3 *J Royal Anthropological Institute (NS)* 653 at 663, asserting that:

[i]n Spey Bay, people’s primary focus was on cetacean endangerment, but when we talked more about how people have children, it became clear that their fears extended to humans, pointing to an endangered future in which the expected link between generativity and futurity could become denatured. People in Spey Bay connect reproduction and children with the future. . . . This suggests a sense that infertility may be a sign of environmental problems as well as harbinger of endangerment.

¹⁴² See e.g. José Esteban Muñoz, *Cruising Utopia: The Then and There of Queer Futurity* (New York: New York University Press, 2009); Eve Tuck & Rubén A Gaztambide-Fernández, “Curriculum, Replacement, and Settler Futurity” (2013) 29:1 *J Curriculum Theorizing* 72.

¹⁴³ A necessarily partial list includes: Nixon, *supra* note 50; Carmen G Gonzalez, “Environmental Justice and International Environmental Law” in Shawkat Alam et al, eds, *Routledge Handbook of International Environmental Law* (London: Routledge, 2013) 77; Carmen G Gonzalez, “Bridging the North-South Divide: International Environmental Law in the Anthropocene” (2015) 32:2 *Pace Env’tl L Rev* 407; Sumudu Atapattu & Carmen G Gonzalez, “The North-South Divide in International Environmental Law: Framing the Issues” in Shawkat Alam et al, eds, *International Environmental Law and the Global South* (Cambridge: Cambridge University Press, 2015) 1; Karin Mickelson, “Beyond a Politics of the Possible? South-North Relations and Climate Justice” (2009) 10:2 *Melbourne J Intl L* 411; Anna Grear, “Towards ‘Climate Justice’? A Critical Reflection on Legal Subjectivity and Climate Injustice: Warning Signals, Patterned Hierarchies, Directions for Future Law and Policy” (2014) 5:0 *J Human Rights & Env’t* 103; Joyceta Gupta, “Climate Change: A GAP Analysis

account, or mainstream environmentalist discourse on toxics, confront the challenges posed by queer theorists to visions of futurity that embrace “reproductive and heteronormative politics of hope”—let alone queer theoretical revisions of this critique in light of assisted reproduction.¹⁴⁴ A relational approach to intergenerational justice requires attention to these voices and perspectives, and more.

A full exposition of diverse perspectives on futurity is necessarily a massive, ongoing, collective project, and certainly beyond the scope of this paper. What we can offer, however, is an example of one significant angle of vision and discourse that has been left out of the orthodox account of intergenerational justice, and mainstream conversations about everyday toxic exposures: critical disability studies. We have chosen critical disability studies as our central example because it presents a rich conversation on questions relating to toxics and justice over time that cuts against the grain of mainstream accounts of toxic exposure, thus offering a glimpse of what is missing from approaches that treat future persons as a homogenous, average-able group, whose interests are best discerned with reference to claimed objectivity. In particular, having set out the very real concerns posed by exposure to toxic chemicals, critical disability studies scholarship calls on us to confront evocations of “anomalous bodies” as emblems of a tragic or dystopian future as constituting a distinct set of harms with their own distinct intertemporal dimensions. Moreover, critical disability studies scholarship offers a vision of futurity that is itself hospitable to relational analysis. The critical disability studies focus on social construction in particular is deeply attentive to the importance of intersubjective

Based on *Third World Approaches to International Law* (2010) 53:1 *German YB Intl L* 341; Julia Dehm, “Carbon Colonialism or Climate Justice? Interrogating the International Climate Regime from a TWAAIL Perspective” (2016) 33:3 *Windsor YB Access Just* 129; Usha Natarajan, “TWAAIL and the Environment: The State of Nature, the Nature of the State, and the Arab Spring” (2012) 14:1 *Oregon Rev Intl L* 177; Michael M’Gonigle & Louise I’akeda, “The Liberal Limits of Environmental Law: A Green Legal Critique” (2013) 30:3 *Pace Envtl L Rev* 1005.

¹⁴⁴ Stu Marvel, “Polymorphous Reproductivity and the Critique of Futurity: Toward a Queer Legal Analytic for Fertility Law” (2013) 4:2 *Jindal Global L Rev* 294 at 306, quoting Judith Halberstam, “The Anti-Social Turn in Queer Studies” (2008) 5:2 *Graduate J Soc Sci* 140 at 141.

relationships over time, especially as contemporary individuals and communities define “harm” in their imaginings of the long-term consequences of toxic exposures.

Critical disability studies scholarship begins with the premise that disability is relational. It does not reside in the minds or bodies of individuals, but in the natural and built environments that individuals inhabit: the social institutions, laws, and policies within which they are embedded and that regulate their daily interactions and encounters; and the “social patterns that exclude or stigmatize particular kinds of bodies, minds and ways of being.”¹⁴⁵ This understanding of disability stands in stark contrast to the medical model of disability whereby atypical bodies and minds are regarded as deviant, pathological, defective, and in need of cure, fixing, rehabilitation, or even elimination.¹⁴⁶ Disability, understood as a biological phenomenon, is “the presence of a physical or cognitive difference that deviates negatively from a ‘mundane’ norm.”¹⁴⁷ Our framing of disability, like that of a number of critical disability scholars, does not deny the materiality of the body—the experiences of pain, altered mood, or living with one limb¹⁴⁸—but suggests that we cannot make sense or meaning of these qualities or experiences of embodiment outside of the socio-cultural or medical practices and familial, community, and

¹⁴⁵ Alison Kafer, *Feminist, Queer, Crip* (Bloomington: Indiana University Press, 2013) at 6.

¹⁴⁶ Responding to disability according to the medical approach requires individual treatments, rehabilitation, and medical research directed at cure, rather than social responses and accommodations and extensive social change, while expertise for disability lies with medical practitioners and health care providers, not with persons with disabilities themselves.

¹⁴⁷ Tom Koch, “Disability and Difference: Balancing Social and Physical Constructions” (2001) 27:6 *J Med Ethics* 370 at 370.

¹⁴⁸ Carol Thomas and Susan Wendell, for example, have both challenged rigid social models of disability that limit explanations of the ability of persons with disabilities to participate as full citizens in society to social/environmental factors and fail to account for bodily differences or limits. See Carol Thomas, *Female Forms: Disability, Human Rights, and Society* (London: Open University Press, 1999); Susan Wendell, *The Rejected Body: Feminist Philosophical Reflections on Disability* (New York: Routledge, 1996).

governance relationships that give them meaning.¹⁴⁹ Stacy Alaimo goes even further and argues that we also need to attend to how toxic materiality—including BFRs and phthalates—affects and constitutes disability.¹⁵⁰ Our bodies are in constant interchange with our environments from the moment of conception. As Rosemarie Garland-Thomson reminds us, “the changes that occur when body encounters world are what we call disability.”¹⁵¹

For disability scholar Alison Kafer, “[d]isability is experienced in and through relationships; it does not occur in isolation.”¹⁵² For example, disability exists in the relationship of being considered outside of the norm, the relationship of being stigmatized, as well as in all ableist encounters. In these relationships, disability is a form of disadvantage or oppression that is systematically imposed on top of one’s impairment.¹⁵³ Understanding that disability is constructed, including through relationships, enables us to appreciate that disability is “caused by a contemporary social organization that takes little or no account of people with impairments”¹⁵⁴ and requires that we look to sources beyond the individual for causes of disablement. Critical disability scholarship instructs us to see the ways in which disability is not an ontological reality—a form of individual pathology to be remedied or prevented—but rather how mind-body differences are normatively ascribed meaning and value within socio-material contexts.

On this understanding, each of us is potentially disabled (especially in an ableist world). Indeed, we are all simultaneously abled and disabled

¹⁴⁹ Dan Goodley, *Dis/ability Studies: Theorising Disablism and Ableism* (London: Routledge, 2014) at 64.

¹⁵⁰ Stacy Alaimo, *Bodily Natures: Science, Environment and the Material Self* (Bloomington: Indiana University Press, 2010) at 12.

¹⁵¹ Rosemarie Garland-Thomson, “Disability and Representation” (2005) 120:2 PMLA 522 at 524.

¹⁵² Kafer, *supra* note 145 at 8.

¹⁵³ Shelley Tremain, “Foucault, Governmentality, and Critical Disability Theory: An Introduction” in Shelley Lynn Tremain, ed., *Foucault and the Government of Disability* (Ann Arbor: University of Michigan Press, 2005) 1 at 9.

¹⁵⁴ *Ibid.*

depending on time, place, and undertaking. As Sarah Jaquette Ray explains: “[a]bility is relative to phase of life and to society’s structural expectations and physical designs. Accessibility and design are relative to the ableism that informs their construction.”¹⁵⁵ Thus, disability is a dynamic or a “continuum,”¹⁵⁶ “where one is disabled in different spheres of life and to different degrees.”¹⁵⁷

Still, as Eli Clare¹⁵⁸ and others¹⁵⁹ acknowledge, the recalcitrance of the body pushes back and invites us to consider the complex relationship between disability and illness. While disability rights activist, writer, and wheel chair user, Catherine Frazee is fond of pronouncing: “I’m the healthiest person I know,”¹⁶⁰ Susan Wendell has written, “some unhealthy disabled people... experience physical or psychological burdens that no amount of social justice can eliminate. Therefore, some very much want to have their bodies cured, not as a substitute for curing ableism, but in addition to it.”¹⁶¹ This impetus flows, however, not from a desire to bring

¹⁵⁵ Sarah Jaquette Ray, *The Ecological Other: Environmental Exclusion in American Culture* (Tucson: The University of Arizona Press, 2013) at 66.

¹⁵⁶ *Ibid.*

¹⁵⁷ Peter Freund, “Bodies, Disability, and Spaces: The Social Model and Disabling Spatial Organisations” (2001) 16:5 *Disability & Society* 689 at 692.

¹⁵⁸ Clare writes about experiences of cancer, chronic painful and fatiguing illnesses and breathing difficulties as examples of conditions that those who embrace bodily difference would nonetheless choose to cure or treat. See Eli Clare, *Brilliant Imperfection: Grappling with Cure* (Durham: Duke University Press, 2017) at 60–61.

¹⁵⁹ See e.g. Carol Thomas, *Sociologies of Disability and Illness: Contested Ideas in Disability Studies and Medical Sociology* (New York: Palgrave Macmillan, 2007); Roxanne Mykitiuk & Jeff Nisker, “The Social Determinants of ‘Health’ of Embryos: Practices, Purposes, and Implications” in Jeff Nisker, Francoise Baylis, Isabel Karpin, Carolyn McLeod & Roxanne Mykitiuk, eds, *The “Healthy” Embryo: Social, Biomedical, Legal and Philosophical Perspectives* (London: Cambridge University Press, 2010) 116.

¹⁶⁰ Catherine Frazee, “Genomics in the Public Interest: Unheard Voices” 2004 GE3LS Symposium—Genomics in an Open Society, Vancouver BC, 6 February 2004, online: <www.genomecanada.ca/sites/default/files/pdf/en/GE3LS_SpringSummer2004.pdf>.

¹⁶¹ Susan Wendell, “Unhealthy Disabled: Treating Chronic Illnesses as Disabilities” (2001) 16:4 *Hypatia* 17 at 18.

the body or mind in line with imperatives about the normal or proper body, but from a wish to reduce suffering. Acknowledging these affective, material, and phenomenological dimensions of the body/self relationship permits us to see, contrary to the liberal conception of the autonomous self, that the subject is never fully determined but provisional and relational, and in constant dialogue with time, spaces, environments, objects, and experiences.

Efforts to conceptualize the embodied effects of toxic exposures as “harms” to present and future persons often rely upon a conception of the “natural” or the “normal” in characterizing embodied difference.¹⁶² Critical disability scholars draw our attention to the way in which the conditions linked to toxic exposures are considered incidents of harm, injury, tragedy, and degradation caused by the disruption of the natural body and the natural environment by synthetic chemicals.¹⁶³ This imperative to eliminate disability “defects” expressed in environmental health discourses is pervasive. Moreover, from the perspective of intergenerational justice, the impetus to eradicate the harm in the present is perpetuated into the future. Because, as Kafer explains, “[t]he *presence* of disability . . . signals . . . a future that bears too many traces of the ills of the present to be desirable . . . a future with disability is a future no one wants”.¹⁶⁴ How we think about or conceptualize disability in the present determines how we envision disability in the future. And, the common normative view is that “it is the very *absence* of disability that signals [a] better future” for us and for our

¹⁶² Scott, “Gender Benders”, *supra* note 131 at 255–56.

¹⁶³ In some ways, Eve Tuck’s call for a moratorium on “damage-based research” should reach environmental health and justice researchers decrying “birth defects”, “developmental delays” and other possible impacts of toxic exposure as well. With particular reference to research on Indigenous communities, Tuck notes how damage narratives—even when motivated by a desire to document and draw attention to “peoples’ pain and brokenness” for the purpose of “hold[ing] those in power accountable for their oppression”—have the result of “reinforc[ing] and reinscrib[ing] a one-dimensional notion of these people as depleted, ruined, and hopeless”: Eve Tuck, “Suspending Damage: A Letter to Communities” (2009) 79:3 *Harv Ed Rev* 409 at 409.

¹⁶⁴ Kafer, *supra* note 145 at 2.

progeny.¹⁶⁵ Disability is often viewed in mainstream environmental health discourse as the sign of no future or no good future.

In response to these views, Kafer writes that we need to ensure that discourses on the “possible impairments linked to toxic exposures do not replicate ableist language and assumptions.”¹⁶⁶ She asks how we can challenge toxic environments and the use of toxics without relying on the fear of the “harm” of disability to motivate a public response thereby perpetuating socially sanctioned accounts of disability fear and attitudes that disability is a tragedy. In line with Kafer, Clare elaborates on the way in which movements to prevent environmental and toxic degradation mobilize fears of certain kinds of bodies-minds—those impaired with cancer, asthma, birth defects (sic) and learning disabilities, for example—to lend support to their cause. As Clare asserts: “[t]his strategy works because it taps into ableism.”¹⁶⁷ Relying (even implicitly) on notions of disability and chronic illness as undesirable and tragic conditions in need of cure, prevention, or elimination, such campaigns perpetuate stereotypical and harmful views about the quality of life of those living with body-mind differences. In addition, as Clare argues:

by bluntly leveraging ableism, [such strategies] conflate justice with the eradication of disability. The price disabled and chronically ill people pay for this argument is high. It reduces our experiences of breathing, of living with conditions deemed birth defects, of having cancer, of learning in many different ways to proofs of injustice. This reduction frames disability yet again as damage located entirely within individual body-minds while disregarding the damage caused by ableism. . . . It declares us as unnatural as coal-burning power plants.¹⁶⁸

¹⁶⁵ *Ibid* at 2.

¹⁶⁶ *Ibid* at 159.

¹⁶⁷ Clare, *supra* note 158 at 56. It has also been demonstrated that such strategies tend to tap into an underlying heteronormativity. See Scott, “Gender Benders”, *supra* note 131 at 255–56; Mei Chen, “Toxic Animacies, Inanimate Affections” (2011) 17:2-3 *GLQ: J Lesbian & Gay Studies* 265.

¹⁶⁸ Clare, *supra* note 158 at 56.

From the point of view of those living with body-mind differences, proponents of the anti-toxics movement, in working to eliminate or decrease exposures that may cause disability, are often motivated by fear of disability. While scientific and research resources are allocated to investigating the environmental toxic exposures that cause physiological and morphological mutations that result in disability in current and future generations, from a disability justice perspective, it is the toxic social environments, more than toxic chemical environments, that are in fact harmful to present and future generations of persons with disabilities. We must think beyond the narrow view of chemical exposures as a cause of disability, and instead confront the role played by pervasive toxic social environments that treat disability as a harm requiring prevention or cure. These socio-toxic environments are related to discrimination, lack of accommodation, and socio-economic disadvantage for persons with disabilities and are reinforced in the world of emerging and increasingly-promoted prenatal screening practices encouraging the prevention of birth of persons with disabilities. On this view, it is this socio-toxic environment that is more harmful for persons with disabilities than the risks of toxic exposures.

From this perspective, it is imperative that research on and understandings of toxic exposures not conflate environmental injustice and harms with body-mind difference, and disaggregate the possible results of exposures to toxic substances that affect the body from the person—however they are embodied. Moreover, it is essential that researchers and policy makers do not cast disability as tragedy or harm by regarding persons with disabilities as the signs of environmental injustice. Such perspectives efface the ways in which we are all affected by toxics, not just those of us with visible or diagnosed “abnormalities” or harms.¹⁶⁹

In assessing the potential harms of everyday toxics such as BFRs and phthalates, critical disability studies scholars insist that we cannot rely upon

¹⁶⁹ This is not to suggest that all persons are equally situated in relation to toxic exposure levels and burdens, equally attributed responsibility for avoiding exposure or risk of exposure, or that they have equal power in determining which risks of exposure to assume. As we have argued elsewhere in this article, all of these are unevenly distributed on the basis of gender, race, socio-economic status, and geography, for example.

normative conceptions of the body in assessing the effects of toxics on embodied difference. While toxic exposures may affect embodied variation, they do not create it; human bodies are already highly variable. Clare uses the example of monocultures to advance arguments regarding the dangers of imperatives towards removing difference from our non-human and human worlds. Monocultures are “ecosystems that have been stripped, through human intervention, of a multitude of interdependent beings and replaced by a single species.”¹⁷⁰ It is only through persistent effort, force, extractions, and purging that monocultures are created and sustained: “a world of damage lies beneath the obvious sameness.”¹⁷¹ Clare goes further to worry that the eradication of difference toward monoculture is a pattern that has been, and continues to be, pervasive over time. He writes that “[t]he un-choosing of disability fits into this pattern, one force among many, threatening to create a human monoculture.”¹⁷² Practices of genocide, incarceration, involuntary sterilization, and colonization have all led to socially created and enforced monocultures. In emphasizing the potential harms of toxic chemicals, we are cognizant that a monoculture emphasis leads some people to believe that diversity is a harm. Monocultures are often toxic for the environment and for human societies, be they biological or social. This emphasis on monoculture leads Clare to ask: “How do we witness, name, and resist the injustices that reshape and damage all kinds of body-minds—plant and animal, organic and inorganic, nonhuman and human—while not equating disability with injustice?”¹⁷³

Building on the insights of queer ecology scholars, critical disability studies proposes that our conception of potential harm needs to rest not on an appeal to ideas of a normal or normative body, but rather on a “more proactive (rather than polluted) politics that argues for the integrity, security, and health of bodies, homes, families, and communities without

¹⁷⁰ Clare, *supra* note 158 at 132.

¹⁷¹ *Ibid* at 133.

¹⁷² *Ibid* at 135.

¹⁷³ *Ibid* at 56. Similarly, Kafer asks: “How can we continue the absolutely necessary task of challenging toxic pollution and its effects without perpetuating cultural assumptions about the unmitigated tragedy of disability?” Kafer, *supra* note 145 at 159.

reproducing the eugenics discourse of the “normal/natural”.”¹⁷⁴ As Dayna Nadine Scott observes in her study of toxic exposure on the Aamjiwnaang reserve, advocacy strategies might seek to “find harm where there is illness and suffering, but not simply where there is *difference*.”¹⁷⁵ This approach promotes increased capacity for action as a criterion for intergenerational justice, not continued “conformity with existing categories of life.”¹⁷⁶ As Michelle Murphy explains, “[e]pigenetic and toxicological ways of investigating [toxic] exposures render legible (and erase) the violence of industrial chemicals by tracking *damage* in bodies”.¹⁷⁷ But as Murphy notes, following Eve Tuck, in collecting and drawing attention to “the data of damage”, the environmental health community becomes “entangled in the surveillance and pathologization” of various people and communities, now and in the future.¹⁷⁸ Thus, while we do not want to ignore the ways in which today’s inequities matter to questions of intergenerational justice, we also do not want to allow theories of epigenetic inheritance, as an example, to reinscribe race or (dis)ability as inherited pathologies.¹⁷⁹ We want to preserve space to imagine what Murphy calls “alter-relations”: a continuous capacity to generate new, alternative relations and futurities.

Because we cannot know in advance what the differences of the future will look like, an ethic and politics of openness is required to respond to the

¹⁷⁴ Giovanna Di Chiro, “Polluted Politics? Confronting Toxic Discourses, Sex Panic and Eco-Normativity” in Catriona Mortimer-Sandilands & Bruce Erickson, eds, *Queer Ecologies: Sex, Nature, Politics, Desire* (Bloomington: Indiana University Press, 2010) 199 at 210.

¹⁷⁵ Scott, “Gender Benders”, *supra* note 131 at 262 [emphasis in original].

¹⁷⁶ Robyn Lee & Roxanne Mykitiuk, “Surviving Difference: Endocrine-Disrupting Chemicals, Intergenerational Justice, and the Future of Human Reproduction” *Feminist Theory* [forthcoming].

¹⁷⁷ Michelle Murphy, “Alterlife in the Ongoing Aftermath: Exposure, Entanglement, Survivance”, 21 March 2016, ‘Toxic: A Symposium on Exposure, Entanglement and Endurance’, online: <www.toxicsymposium.org/conversations-1/2016/3/1/alterlife-in-the-ongoing-aftermath-exposure-entanglement-survivance> [emphasis added] [Murphy, “Alterlife”].

¹⁷⁸ *Ibid.* See also Tuck, *supra* note 163.

¹⁷⁹ Murphy, “Alterlife”, *supra* note 177.

threats to future persons, as well as ongoing recognition of how difference contributes to the fullness of life. We have a responsibility to future persons without foreclosing on who those future people may be. Critical disability studies scholarship contributes to the development of an understanding of intergenerational justice that “recognizes a responsibility to protect difference across and within generations.”¹⁸⁰ Accordingly, this conception of intergenerational justice seeks to address the suffering of future persons, “while also welcoming the unknown, that which confounds our expectations, and without attempting to exclude those future persons who do not conform to our existing norms of embodied difference.”¹⁸¹

V. INTERGENERATIONAL JUSTICE, IN RELATIONAL TERMS

“The future can be understood to follow sequentially from a past-present trajectory, or it can be understood as a form of absent presence. From tropes of uncertainty, Utopia, apocalypse, prophecy, hope, fear, possibility and potentiality, the future shapes the present in all manner of ways.”¹⁸²

The special justice problems posed by the possible intergenerational effects of everyday toxics demonstrates what is at stake in our theorizing of intergenerational justice. As mentioned, our political and legal institutions are not necessarily well-suited to addressing the distributive effects of contemporary choices on persons who do not yet exist, or who may never come into being. We have sidestepped philosophical debates about whether rights and duties are owed to future generations in the context of such uncertainties,¹⁸³ and presumed that potential harms to future persons are and should be matters of contemporary moral and political concern. But accepting that basic resolution to the question of obligation only introduces a new, equally thorny, set of questions about how we ought to understand and meet those obligations, including through our legal and political institutions. In this article, we have sought to trouble the orthodox

¹⁸⁰ Lee & Mykitiuk, *supra* note 176.

¹⁸¹ *Ibid.*

¹⁸² Baldwin, *supra* note 139 at 172.

¹⁸³ See *supra* note 75 and accompanying text.

approach of treating generations as aggregable and average-able units that bear and benefit from obligations as a group. In the face of uncertainty and uncontrollability—and in the face of *what we do know* about the endurance and transformation of social and embodied difference over time—we propose that a more relational approach to intergenerational justice is needed.

In addition to our ignorance about the interests and aspirations of future persons, we are also faced with enduring uncertainties as to the nature of our future world, and thus a certain unknowability vis-a-vis the effects that our conduct today might produce in the future. In the context of everyday toxics, this uncertainty is particularly acute since scientific evidence of the above-described effects of exposure is not yet (and possibly never will be) conclusive.¹⁸⁴ We do, however, have some clues as to certain social dimensions of the effects that might be associated with exposure to everyday toxics. While toxicologists, endocrinologists, and epidemiologists continue to discover and debate the mechanisms through which effects occur, other researchers, as demonstrated, have been charting patterns of human exposure across demographic groups. Their findings suggest that the effects of exposures to everyday toxics will be felt unevenly across diverse social constituencies, likely along familiar social gradients of race, class, gender, disability, and socio-economic status. Thus, given the deeply social nature of toxic exposures and effects, we argue that any legal theory capable of grounding meaningful policy prescriptions in this area must be attentive to the complex matrix of social, ecological, and material relations that shapes and constrains autonomy in this regard.

This matrix, where embodied human subjects are not just embedded in a set of personal and structural social relations, but are also immersed ecologically in a material world beyond their control, can further condition the agencies and capacities of people. Our analysis produces two insights: (1) an acknowledgement that the vast uncertainty in the nature and trajectory of that relationship is reason for humility, but not defeatism; and (2) an insistence that any valid conception of justice for “future generations”

¹⁸⁴ See e.g. Kim et al, *supra* note 27 at 17 (regarding BFRs); Swan, *supra* note 21 at 183 (regarding phthalates).

must embrace the inevitable relationship between contemporary inequalities and future harms—and the consequent significance of diverse perspectives on futurity.

VI. CONCLUSION

Intergenerational justice is fundamentally about the obligations owed by people living today to those living in the future. Some of these questions concern what kinds of regulatory measures we should be taking today to prevent certain “harms” tomorrow. Looking at the case of everyday toxics through the lens of feminist materiality allows us to complicate the way we conceive of a “generation” and its interests, the interrelations between current and future generations, and the attitude of “control” we can assume in shaping those interactions. The literature in critical disability studies allows us to see how the question of “harm” itself is bogged down in assumptions of what is “normal” and “natural”—a question difficult enough to answer satisfactorily in today’s world, and one exceedingly difficult for us to answer for tomorrow’s world. Both feminist materiality and critical disability studies thus offer useful tools in developing our understanding of the ways complex social and material relationships span through bodies and over time, contributing to a relational conception of intergenerational justice. This is, of course, just a start toward a collective and ongoing project that must consider and reconsider perspectives on futurity from many sources and standpoints.¹⁸⁵

Traditional law and policy approaches to toxics have included toxic substances legislation, tort law, and consumer choice. Each of these has been criticized for their failures to account for long-term social interests.¹⁸⁶ None,

¹⁸⁵ See *supra* notes 143–144 and accompanying text.

¹⁸⁶ See e.g. Lee & Scott, *supra* note 53; Scott, “Gender Benders”, *supra* note 131; Dayna Nadine Scott, “Body Polluted: Questions of Scale, Gender and Remedy” (2010) 44:1 Loyola LA L Rev 121; Scott, “Testing Toxicity”, *supra* note 38; Leslie Bender, “An Overview of Feminist Torts Scholarship” (1993) 78:4 Cornell L Rev 575; Leslie Bender, “Feminist (Re) Torts: Thoughts on the Liability Crisis, Mass Torts, Power, and Responsibilities” (1990) 1990:4 Duke LJ 848; Melissa Toffolon-Weiss & J Timmons Roberts, “Toxic Torts, Public Interest Law, and Environmental Justice: Evidence from Louisiana” (2004) 26:2 Law & Policy 259; Norah Anne MacKendrick, *The*

moreover, address the imperative to reorient our economic and political systems, which seem bound in cycles of production and consumption that threaten vulnerable persons (present and future) and ecological systems.¹⁸⁷ This would likely involve deep structural revisions to political and economic processes that often leave those bearing the most bodily risk with the least decisional power over capital, industrial, and chemical flows.¹⁸⁸

With the Standing Committee's recent recommendation to create an advocate for future generations, Canada may become one of the jurisdictions to respond to the calls of theorists who advocate for procedural mechanisms designed to bring the interests of future persons into contemporary policy debates.¹⁸⁹ As Canada and other jurisdictions consider how best to instantiate our obligations to future persons, we urge a relational approach to intergenerational justice—one that takes social structures and relations seriously, confronts the challenges posed by material actants, and avoids claims to objective or unsituated perspectives in describing desirable approaches to futurity.¹⁹⁰ Instead of adopting a purely educative or advocacy focus, public bodies tasked with intergenerational justice ought to include a focus on broad public consultation.¹⁹¹

Individualization of Risk as Responsibility and Citizenship: A Case Study of Chemical Body Burdens (PhD Thesis, University of Toronto Department of Sociology, 2012) [unpublished].

¹⁸⁷ See Naomi Klein, *This Changes Everything: Capitalism vs. the Climate* (New York: Simon & Schuster, 2014).

¹⁸⁸ See generally Jackie Leach Scully, *Disability Bioethics: Moral Bodies, Moral Difference* (Lanham, Maryland: Rowman & Littlefield, 2008).

¹⁸⁹ See *supra* note 5. But note United Nations, *supra* note 5 at 28 (describing Canada's existing Commissioner of the Environment and Sustainable Development as an example of a "[n]ational institution for future generations").

¹⁹⁰ See e.g. Shlomo Shoham, *Future Intelligence* (Gütersloh: Verlag Bertelsmann Stiftung, 2010) (describing the Israeli Commission for Future Generations, operative between 2001 and 2006, saying that: "The Commission's opinions were lent great power by its absence of interests other than the good of the country's future, by the purity of its activities and by the foundation of its positions in both practical and research knowledge" at 123).

¹⁹¹ See e.g. Maja Göpel, *Ombudspersons for Future Generations as Sustainability Implementation Units* (Stakeholder Forum, 2011) (describing the Hungarian

Technocratic expertise cannot be seen as a substitute for ongoing public consultation and participation.¹⁹² As the body of critical disabilities scholarship illustrates, there are no objective answers to questions about what counts as “harm”, what should be done about it, or how these determinations may impact present and future persons. Instead, the exercise of looking forward through time is inevitably shaped by relationships. Relational institutional and policy approaches must acknowledge that deep uncertainties about the future are moderated by the knowledge that contemporary inequalities will be infused, one way or another, into future persons and communities—into their physical environments, their social worlds, and in their very flesh.

Commission for Future Generations, active between 2007 and 2011, as being characterized by “frequent exchanges of information with citizens” at 11), online: <www.ieg.earthsystemgovernance.org/ieg/sites/default/files/files/publications/Goepel_Ombudspersons%20for%20Future%20Generations.pdf>.

¹⁹² Cf Menno R Kamminga, “The Ethics of Climate Politics: Four Modes of Moral Discourse” (2008) 17:4 *Environmental Politics* 673; Karin Bäckstrand, “Civic Science for Sustainability: Reframing the Role of Experts, Policy-Makers and Citizens in Environmental Governance” (2004) 3:4 *Global Environmental Politics* 24.