

## **“Toxic worldings” – Introduction to the Special Issue for *Anthropology Today***

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Amidst mounting public concern with our continuous, everyday exposure to harmful chemicals, such as pesticides in food, microplastics in oceans, or in-door pollution, and in the aftermaths of large-scale, human-made environmental disasters of Seveso, Bhopal, Chernobyl and Fukushima, we are increasingly aware of living in a toxic world in which distinctions between inside and outside, purity and contamination are becoming ever more untenable.

The anthropology of our toxic world also opens the boundaries between cognate disciplines – geography, history, archaeology, STS and art practice as well as the natural and health sciences. In this short introduction we situate anthropological approaches within past and present scholarship on toxicity in a post-colonial world. We argue that recent scholarship in environmental humanities, feminist and queer theory can orientate anthropological approaches to toxic worldings, while ethnography offers resources for approaching and apprehending how toxicity intersects with life.

The special issue brings together ethnographies of toxic worlds by early career and established scholars, which highlight anthropology’s potential to make sense of chemically transformed landscapes, relations and human and non-human bodies, and to inspire meaningful ways of living in, engaging with and contesting these worlds.

### *Chemical transformations*

In the course of recent world history - the era of capitalism and empire, industrialisation and development, petrochemical and nuclear technology – the chemical composition of the earth’s soil, water and atmosphere has been permanently changed. A plethora of biologically active, human-made chemical substances have become part of air, water and soil, move between the elements, life-forms and geographical regions, and pervade human and non-human bodies anywhere. Ranging from elementary poisons like heavy metals or radioactive isotopes to complex organic substances, they may cause genetic mutations, trigger cancerous growth or interfere with hormonal regulation, affecting behaviours and interactions amongst multiple species, with long-term implications.

This new geological era changes relations between human and world: not only have humans succeeded in altering the material composition of the planet, but mounting awareness of human-made chemicals also underlines how humans are constituted and permeated by other-than-human matter, part of the world they create (Tsing et al. 2017). This implies a subtle shift in anthropological interest from human relationships with the “environment” or “nature”, to the molecular scale of chemical compounds (Shapiro & Kirksey 2017), and material entanglements and continuities between human and nonhuman bodies, and animate and inanimate world (Tsing 2015). Human-made toxicant’s transport around the world – active through trade and production-chains, and passive through currents of air and sea – further challenges the old distinction between global processes and local lives, events and effects, and

requires reconsidering localised anthropological method and traditional forms of fieldwork (e.g., Fortun 2017).

### *Toxic capitalism, toxic colonialism*

The “slow violence” (Nixon 2013) of toxic exposure is a particularly insidious and deep-reaching dimension of inequality, oppression and exploitation, woven into global and local relations of race, class and gender (Fortun 2001, Murphy 2006, 2017, Auyeru & Swistun 2009, Hecht 2012a, Livingstone 2012). Recognition of the intertwining of class, race, gendered, and chemical distributions of harm has been central to environmental justice movements and to scholarship on toxic exposure (Pellow 2007). Uneven geographies of pollution and toxic environments highlighted, early on, the accretion of toxicities within layered histories of capitalism, colonialism, nationalism, racism, and sexism.

The unequal distribution of exposure, the imposition of toxic burdens, and active processes of “unprotection” (Tousignant 2017) expand the purchase of “environmental justice”, and complicates the existing critique of political economy, traditionally focused on labour and value. At the same time, the emerging interest in chemical expressions of structural violence shift attention beyond classic themes of environmental anthropology, such as extractive agriculture, mining and industrial production, to the side-effects of consumption and everyday life as well as the disposal of waste and attendant “waste economies” of labour and value (e.g. Miller 2014, Chalfin 2019, Doherty 2019).

The toxic legacies of colonialism invite reflections on the challenge of scale, over time as well as space (Hecht 2018) with the quickening of extraction and exploitation and the slowing down of futures and associated hopes. The flow and distribution of toxic waste from global north to global south, but also the outsourcing of dangerous industrial extraction, without protection or regulation, underlines the toxic nature of late modernity itself (Mitman 2004; Fortun 2001; Eriksen & Schober 2017) – the violence and fractures that structure its present, making some lives worth more than others and some lives disposable.

### *Toxicity politics*

Once toxic exposure has been identified as key dimension of domination, public concerns and claims, and contestation and activism against toxic violence move into purview (Petryna 2002, Blum 2011, Liboiron et al. 2018). As political struggles are reconfigured in resistance to toxic exposure or claims for protection, anthropologists may position themselves within such struggles through engaged, collaborative anthropology (Little 2014), learning new methods from “civic science” (Fortun & Fortun 2005). This can contribute to our understanding of new political contradictions and alliances, beyond the confines of the toxic substances: Chilean “intimate activism” (Tironi 2018), Italian environmental anti-mafia resistance (Armiero et al. 2019), or the struggles of South African miners for improved work conditions (Bolt & Rajak 2016).

Another mode is to critically trace protective policies, and the regulation and monitoring of toxic substances through national governments and international conventions (Charnley and

Durham 2010), often drawing on STS research on regulatory negotiations and practices, e.g. the management of “threshold values” and compensation claims (e.g., Boudia & Jas 2014), or the discriminatory effects of regulation for different social groups (Guthman & Brown 2016). The interaction between toxic politics – identifying interests, contradictions and battlegrounds – and governmental policies that control, yet also normalise, toxic exposures, opens a fruitful field for ethnographic enquiry.

The political potency of the toxic (aside from the current use of ‘toxic’ politics) is an integral part of 21<sup>st</sup>-century political imagination, as reflected in dystopian/utopian science fiction (a useful guide to the ethnographic imagination). A permanently polluted world is a common backdrop, from le Guin’s Hainish Cycle to McCarthy’s Road, while the lethal toxicity of the postcolonial periphery is wielded as punishment and extermination in the “colonies” of Atwood’s *Handmaid’s Tale*. At the same time, the resistant political potential of resilience, and the regeneration of life within and from toxic residue, is celebrated in recent Afrofuturist sci-fi productions such as *District 9*, *Neptune Frost* or *Pumzi*.

### *Knowing toxicity*

A crucial challenge to toxic politics is the invisibility and indeed imperceptibility of many toxic substances, and the resulting problem of evidence: what compounds are found in a given environment, where do they hail from, how do they enter and accumulate in human and non-human bodies and materials, and what are their effects? This is partly a matter of scientific knowledge-making and technology – from government to ‘citizen’ science (Allen 2003; Wylie et al. 2017) - in a field dominated by powerful interests seeking to “unknow” toxic risks or prove their negligibility (Murphy 2006; Wylie 2018).

Toxic invisibility also raises questions of perception and the sensorium of bodily experience - of scientific experts, as well as people involuntary exposed to toxins through work-practice or environmental pollution – which may be aligned with scientific measurement or may alternatively contest science and the political-economic interests underwriting it (Petryna 2002, Murphy 2004, Hecht 2012b, Lora-Wainwright 2013, Shapiro 2015). Notwithstanding the risk of romanticization that the anthropological inclination towards evidence ‘from below’ carries – with the dichotomy of “scientific reductionism” vis-à-vis the richness of “lived experience” lurking in the background – such attentiveness to the sensual dimension of evidence (within and outside science) enriches the anthropology of the toxic (and toxicology)(Spackman & Delaet 2017).

Collaborative anthropological research, seeking to combine natural science, ethnographic and popular modes of knowing, can open up the Pandora’s Box of toxic evidence, beyond notions of “conclusive evidence” and “scientific consensus”. In doing so it positions toxic evidence as a field of social and political struggle within intersections of inequality and differentiation, from toxicological laboratory practice and field research, via regulatory efforts by national governments and international conventions, to mundane bodily experiences and observations of toxic exposure, and the use of innovative interactive digital tools (Armiero et al. 2019; Wylie & Shapiro 2017; Wylie 2018).

### *Toxic temporalities*

A focus on toxic matter affects also the human experience of time, and anthropological renderings of history and temporality (e.g. Langwick 2018, Hecht 2018). In a permanently toxic world, human lives and engagements with other humans and nonhumans, play out in a deepening time-scale of their own making. Toxicants are traces, residuals of past events and processes, and thus refer backwards, to industrial, class and colonial history, to long-term destructive processes and accumulations, specific periods of toxic production and use, and to singular catastrophic events of toxic release or contamination (Arnold 2016; Cumming 2018). Even singular molecules can bear the trace of particular times and locations. In this way, toxicants are heritage objects that can be traced back to specific moments and places in history.

At the same time, the durability and mutability of toxicants calls for a different consideration of the future, which is affected by human interventions on a hitherto unimaginable timescale. Toxicants accumulate over generations, transform through chemical or physical breakdown, recombine, and trigger molecular changes in other substances, including DNA. They cause unpredictable effects and mutations of human and nonhuman life, amplified by inter-species interactions – think of mutations to the human intestinal microbiome - for a foreseeable, in some cases unforeseeable future.

### *Impure living*

The most profound, if most obvious, observation concerning the toxic worlds that humans co-inhabit with animals and plants, is their durability. Contrary to the affective impulse to restore or repair that drives some environmental activism, there is no return to purity (Shotwell 2018). Soil, water, air, and the tissues of human and non-human animals and plants are now permeated by human-made chemical compounds, some of which have been established as “toxic”, others not yet.

This diagnosis can provoke fear or disgust. Yet, calls for individual purification (such as through organic food and glacial water) or collective returns (from Anthroposophy to Hindu nationalism) may not be the most fruitful responses. If we –humans and our non-human companions – are irrevocably mixed-up in our basic substance (Ford 2019), then the necessary struggles against systems and perpetrators of toxic violence should be coextensive with a careful search for adequate forms of living “with the trouble” (Haraway 2013), cultivating “matters of concern” (Latour 2003) and “care” (Puig de la Bellacasa 2017). Humans must collectively (re-)discover “arts of living” (Tsing et al. 2017) that expand alliances beyond familiar solidarities and species-boundaries, discern new fault-lines and conflicts, and attend to the emergence of new forms of life out of an always impure substrate (Chen 2012; Davis 2015; Stawkowski 2016; Tironi 2018).

Within this critical endeavour, feminist and queer perspectives draw attention to that what becomes recognised as toxic mutation or toxic embodiment– e.g. reproductive deformities – often aligns with normative gendered and racialised categories, while other forms of violence and destruction go overlooked. Yet, attention to the ways toxic embodiment “disturbs or

aligns with” species, gendered and racialised boundaries also acknowledges shared sites of vulnerability and activism (Cielemęcka, O. & Åsberg, C. 2019).

Such moves into emerging futures can learn from anthropologies of intentional intoxication – be it illegal drug production and use (Pine 2016) or experimentation with synthetic hormones for bodily and gender transformation (Hardon 2017). A reframing of pollution as an inescapable and essential part of living, and even as something to be positively engaged or modulated, without ever losing sight of the underlying “resentful, despairing, painful, screamingly negative affects that surround toxicity” (Che 2012:211 ), can challenge older distinctions of nature and culture, and of matter in and out of place, acknowledging a field of continuous, lively, if potentially violent negotiation (Davis 2015). It is the tension between the active engagement with impurity and mutability, on the one hand, and the classic critique of exposures and inequalities, on the other, that can make the toxic world a fruitful field for anthropological inquiry.

### *Ethnographic perspectives*

The essays in this collection explore forms of toxic embodiment and entanglement, the uneven distributions of harm and concern, the ambiguous intertwining of exposure and livelihoods, as well as registers of visibility and the politics of knowledge. Ethnographic work on toxic worldings may start from objects, materials, assemblages, relations, policies or practices to generate perspectives on ways of seeing, sensing and knowing toxicity and forms of evidence. At different scales, toxicity may congeal into matters of concern or dissipate into forms of unknowing; it may be located or ignored, or embraced and made habitable. Embedded in economies, livelihoods and ecologies, the toxic may congeal in different forms and regimes of apprehension and perceptibility, knowledge and action, and in relations of inequality, exclusion and hierarchy. But toxicities and their residues may be inseparable, also, from work and livelihoods, home and kinship, forms of commensality and repair. Ethnography offers perspectives on the indeterminacy of toxic worldings, where the questions we ask – how we can know toxicity, at what scale, through which methodologies – are shared with our interlocutors.

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