



# Markets and Mutations: mosquito nets and the politics of disentanglement in global health



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## ABSTRACT

Malaria management involves the continuous calibration of micro-environments, namely of the entangled habitats of mosquitoes, parasites and humans. This article focuses on humans and mosquitoes as unruly actors of environmental management. Drawing on economic sociology, I show how framing mosquito nets as ‘humanitarian goods’ disentangles particular economic and ecological realities. Juxtaposing politico-economic processes of mosquito net production and distribution with the emergence of insecticide resistance in mosquitoes I show how their disentanglement creates unintended social and disease realities. This suggests rethinking the spatio-temporal politics of environmental management of mosquitoes and malaria, and nuances the patterns of how exactly humanitarian goods ‘do good’.

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## 1. Introduction

Mosquitoes have difficulties to qualify as companion species for humans (Haraway, 2008; Beisel, 2010a,b). Inflicting itch and capable of transmitting deadly infectious diseases, mosquitoes and their habitat have for centuries been objects of environmental management (e.g. Mitchell, 2002; Packard, 2007; Ross, 1902; Russel, 1955). This paper contributes to this special issue on environmental management by interrogating mosquito nets as a global health tool that separates humans from unwanted entanglements with mosquitoes and parasites. Recent scholarship in geography, anthropology and cognate disciplines has emphasised the more-than-human or multispecies character of biosocial life (Whatmore, 2002; Hinchliffe, 2007; Kirksey and Helmreich, 2010). In this way of thinking human, animal and plant life is not neatly divided up in human on the one hand, and natural on the other. Rather the focus of analysis is on the interwovenness, or the “material-semiotic knottings” of humans with other forms of life – understanding for instance dogs and humans as companion species, and bacteria as constituents of human bodies (Haraway, 2008). While the initial focus was on the moments “when species meet” (Haraway) or on tracing non-human “presences” in urban centres (Hinchliffe et al., 2005), more recent academic work has turned its attention to more troubled forms of multispecies coexistence: focusing on dangerous encounters between humans and wolves (Buller, 2008), humans and cougars (Collard, 2012), the

“volatile ecologies” that bind humans, elephants and alcohol together (Barua, 2013), or on “inhuman nature” and its disasters (Clark, 2011), such as tsunamis (Tironi and Fariás, 2015). But it does not need overtly aggressive animals or exuberant physical forces to create uncomfortable human–nonhuman entanglements, more-than-human relations with more harmless or less visibly aggressive creatures can be “awkward” too (Ginn et al., 2014; Beisel et al., 2013). As Nading shows *Aedes* mosquitoes, humans and the dengue virus are deeply entangled with “changes in bodies reverberate through landscapes, and vice versa” (Nading, 2014: 10). But in the case of dangerous diseases or slimy slugs it is not only attachment that matters, rather entanglement and detachment go together. Examining the sticky lives of slugs and gardeners Ginn foregrounds practices of detachment in more-than-human relations characterised by disgust and violence (Ginn, 2014, see also Candea, 2010). Similarly, Kelly and Lezaun characterise malaria control as a task of “laborious disentanglement” of mosquitoes, humans and parasites describing how politics and practices of separation relate to urban maintenance and the management of environments more broadly (Kelly and Lezaun, 2014).

My article is situated in this literature and an ethos of multi-species entanglements, but concerned with a different politics of disentanglement. Drawing on economic sociology (Callon, 1998, 2007; Çalışkan and Callon, 2009, 2010), I analyse the management of malaria by juxtaposing politico-economic processes of mosquito net production and distribution with the emergence of insecticide resistance in mosquitoes. In this I am interested how framing of

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mosquito nets as “humanitarian goods” (Redfield, 2012) entangles them into particular markets and logics, and disentangles them from others (Callon, 1998). I carve out the ways in which dominant logics in global health and malaria control obscure local economic practices and downplay the importance of shifting ecologies. I emphasise the effects that particular framings of mosquito nets have for situated practices of environmental management (Lippert et al., 2015): for humans producing, selling, buying and sleeping under nets, as well as for mosquitoes being repelled or killed by the nets and its enmeshed insecticides.

The first disentangled reality I identify is located in the political economy of mosquito nets. Insecticide-treated nets today are objects of global health, they are meant to preserve the health of populations by establishing a – both manual and chemical – barrier between humans and mosquitoes. In the global health logic it remains secondary how the nets are produced, distributed and who benefits economically from their sale. What is of importance is the capacity of nets to ‘save lives’, as exemplified in an ad of the charity Nothing but Nets: “Send a Net. Save a Life” (Nothing but Nets, 2015), or in net counts such as the Global Fund’s “450 million insecticide-treated nets distributed” (The Global Fund, 2015). I trace how this understanding of nets as a singular object, namely as a humanitarian good, neglects the nets’ potential power as an economic object.<sup>1</sup> Nets are manufactured by international companies and not locally where the nets are used. This means international donations of mosquito nets end up mostly benefiting companies from developed countries, conveying only a single benefit to the end-user in developing countries: protection from mosquito bites. Not casting the economic value of nets as a resource I suggest is a missed opportunity and has (unwanted) side effects: the introduction of insecticide-treated nets has put people out of work in Ghana, where the sewing of mosquito nets used to be an income source for tailors.<sup>2</sup> This invisibility can be read as – what economists characterise as ‘negative externality’, a “disentanglement” in Callon’s vocabulary (Callon, 1998). I suggest that making such disentangling practices visible enables us to learn valuing nets as a tool of global health *and* an economic good.

The second disentanglement I discuss also interferes with policies, but rather differently. Mutations, genetic adaptation of mosquitoes to insecticides used in insecticide-treated nets have increasingly been detected in malarious environments on the African continent, and threaten to significantly undermine the effectiveness of nets (WHO, 2012). The insecticide applied on the nets accelerates mutations, it increases selection pressure on the mosquitoes, and thus pushes mosquito populations collectively to adapt their bodies to control interventions. More than simply endangering the effectiveness of one specific disease control technology though, the vitality of mosquitoes threatens malaria vector control more broadly, as not only nets rely on insecticides, but also indoor insecticide spraying of habitations. Taken together these two technologies form the backbone of current mosquito control strategies, resistance could thus have dramatic consequences. Insecticide resistance also points to the limited agency of humans in environmental management. In this sense mosquitoes and their mutating genomes and bodies can be read as a second disentanglement of current environmental management strategies in malaria

control. By trying to keep mosquitoes passive, natural and controllable, humans achieve the opposite; mosquitoes assert their vitality and adapt to shifting environments. My analysis of mutating mosquitoes as disentangled from current mosquito net politics I hope serves to underline what Nigel Clark calls the “inhuman” quality of nature (Clark, 2011). It emphasises that mosquitoes are more dynamic than human control efforts reckon with, and that we live on “an earth which does its own thing, whatever surcharge we add to its mobilizations – or to its obduracy” (ibid: 26).

But why combine the political economy and biology of mosquito nets in one paper? Drawing these cases together I suggest enables us to learn more about undesirable effects of policy-making. After all, both cases have in common that they cannot be controlled or harnessed by current malaria management practices. Indeed, as Shaw et al. observe, mosquitoes are an instructive case study into “the impossibility of controlling “life”, suggesting that “‘monstrosity’ [of mosquitoes] arises in the excesses and discontinuities between the mosquito’s *umwelt* and the human efforts that seek to eliminate it” (Shaw et al., 2013: 260). Inspired by recent social studies of science and technology (cf. Law, 2004; Mol, 2003, 2008), I pay attention to the *effects* that escape mosquito management interventions – things that do not seem to fit or do not seem to matter to the problem in question. As we will see, this is an investigation into dominant and alternative logics in global health, and their lived interferences. I use the term ‘logic’ in the way Annemarie Mol uses it (Mol, 2008); not as a term referring to an encompassing coherence, but to “a local, fragile and yet pertinent coherence” (ibid, p. 8). Within malaria control biomedical concerns can be identified as the dominant logic informing interventions. This logic sees malaria as part of health care provision, and is derived from knowledge produced within the biomedical sciences, a field that has recently reconfigured itself into “that obscure object of global health” (Fassin, 2012). As Fassin argues there is much that might indeed not be new in the shift from international public health to global health. However, for the purpose of this article it is worth emphasising some selected shifts: (i) coming with the entrance of the World Bank into matters of health (through structural adjustment programmes), scholars have documented a *shift towards numerical logics*, comparisons and equivalences made between continents and countries, later epitomised by the Millennium Development Goals (Pfeiffer and Chapmann, 2010; Erikson, 2012). (ii) In combination with this, a *shift towards fragmentation* of actors, a new dominance of public–private initiatives and other parastate actors over national actors (Geissler, 2013, 2015; Rees, 2014), and a move towards ‘projects’ as units of action has been observed (Whyte et al., 2013; Krause, 2014). (iii) Underlying is an *uneven geography* of “the global health complex” (McGoey et al., 2011): of technology transfer and travelling models (Behrends et al., 2014), of colonial and postcolonial power relations (Keller, 2006), of continued neglect (Kelly and Beisel, 2011) and unequal collaborations and experiments in global health science (Rottenburg, 2009; Crane, 2013; Geissler and Okwaro, 2014).

As Peter Redfield shows these moves have come together with a proliferation of what he calls “humanitarian goods” (Redfield, 2012). Drawing together diverse objects, such as water purification straws (Life Straw), plastic bags meant to substitute toilets (PeePoo bags), and a peanut-paste designed to address malnutrition (Plumpy’Nut), Redfield suggests that these mobile technologies of humanitarian aid and global health have helped form new “bioexpectations”, namely the attempt to address the world’s most pressing problems not through new regimes of governance, but through the “alchemy of innovative design and empirical monitoring” (ibid: 158). What unites these objects is not only that they are designed to substitute lacking health, sanitation or nutrition infrastructures, but also that they work as goods in humanitarian markets. As such,

<sup>1</sup> I use the term, ‘object’ here in the sense actor-network theory and after use it. Objects are understood not as unchangeable material objects, but as the outcomes of socio-material relations (Latour, 2005). As Law and Singleton (2003) put it: “many (probably all) objects putatively located in physical space can only be detected in a network of relations that makes them visible” (Law and Singleton, 2003: 4, emphasis in the original). This underlines the contingent character of objects and makes “ontological politics” an important focus of study (Mol, 1999).

<sup>2</sup> The practice of sowing nets is more wide spread, however I focus on Ghana, as this article draws on ethnographic material collected in Ghana in the course of 9 months of fieldwork in 2007/2008 and 2009/2010.

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