

A mediating capacity

Toward an anthropology of the gut

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Abstract

In this article I seek to develop a conceptual framework for anthropological work on ‘the gut’ by bringing together reflections on ethnographic fieldwork on nutrition and well-being in KwaZulu-Natal, South Africa, with recent advances in the sciences of the gastroenterological and enteric nervous systems. While new evidence suggests that diet, immune system functioning, memory, and behaviour are shaped by the characteristics and processes of the enteric nervous system, it has also come into the public sphere as an object of intense disputation. Despite an ethnographic archive elaborating the diverse ways in which the gut contributes to well-being, it is still seen as a collection of folk systems incommensurable with scientific knowledge. I suggest that the mutual absorption of the natural and the social in the mediating membrane of the gut requires a more robust concept than either illness narrative or biosociality, and I ask: what would an anthropology of the gut look like?

Keywords

gut, semiotics, narrative, biosociality, absorption

Introduction

During the course of my ethnographic fieldwork in 2009–2010 in KwaZulu-Natal, South Africa, I examined the implementation of a nutrition intervention for twelve thousand timber plantation labourers, and traced the production and circulation of a set of alternative ‘nutritive supplements’ that promise to augment the body’s capacity, both social and physical (Cousins 2014). The material challenged me to ask whether we can think of the gut, defined loosely as the whole apparatus from the mouth to the anus – including the stomach, intestines, colon, and enteric nervous system that envelops them – as a specific kind of anthropological object. Why anthropology has not previously enquired directly into the gut is itself an interesting question, although the ethnographic archive can be read against the grain for traces of its enduring importance to social life (see for example Bayart 1993; Geissler 2000; Green, Jurg, and Djedj 1994; Nugent 2010; Richards 1948, 1969). In this article, I bring together several scenes from recent fieldwork with emerging biomedical and ethnographic research in order to suggest that we think of the gut as a particular kind of mediator of social relations, and, in a more philosophical register, of insides and outsides, of events, and of difference. While there are limitations to such an approach, which I touch on below, I seek here to build a more robust concept of the gut as an anthropological object of enquiry.

It was while spending time with labourers in the timber plantations in northern KwaZulu-Natal that I noticed the importance not only of securing the dietary requirements necessary for heavy labour, but also the mundane effort to augment one’s capacity, indexed by the isiZulu term ‘*amandla*’ (strength, power, efficacy), that finds expression in the popular curatives and supplements that are consumed by many people across the region. That effort is a direct rejoinder to the structural violence of apartheid, and its antecedents in colonialism, that have powerfully shaped the dietary and health outcomes of Black South Africans and contemporary experiences of the HIV epidemic. Building on the suggestion by James Wilce (2003) and others that the immune system is better understood as a semiotic system (see also Napier 2012), I follow Elizabeth Wilson’s (2004) insight that the gut is centrally involved in semiosis through its inter-involvement in neuroenterological pathways between the brain and the rest of the body. While semiotics, or the study of signs and their physical vehicles (Peirce 1958; Hoffmeyer 1996; Sebeok 1991), has been applied in different ways to the study of health and illness (Desjarlais 2003; Sontag 1977; Treichler 1987), here I lean on the work of anthropologists who have used Charles Sanders Peirce’s understanding of sign systems for thinking about communication in everyday life processes (Parmentier 1994; Mertz 2007;

Mertz and Parmentier 1985; Silverstein 2003).¹ Following Wilce's example, I am particularly interested to explore the notion of the 'indexical sign vehicle' to make sense of the gut's role in mediating the making of meaning and bodily well-being in everyday life.

The gut plays an important role not only in mediating food, pharmaceuticals, violence, and politics, as advances in the understanding of the human microbiome and neuro-enterology have shown, but also in the social and cultural orders of action and reflection that are brought to bear on the body, and specific parts of the body through which becoming a person comes into question. In working through a set of questions concerning the social life of the gut, I seek to develop a conceptual framework through which we might consider the ways in which the natural and the social are mutually absorbed in its porous linings. My ethnographic material from fieldwork in South Africa leads me to suggest that if the gut is understood as a critical site in which nature and culture meet, we might be better able to ask after the ways in which the body bears the traces of structural violence and the breakdown of social relations.

The substance of endurance and the sociality of the gut

Amandla!

In 2009, I began following a nutrition intervention designed to supplement the diets of timber plantation labourers in northern KwaZulu-Natal. This intervention was piloted and implemented by a large paper and pulp corporation that employed twelve thousand people, mainly women, in a system of outsourced, casualized labour. It took the form of the delivery of a hot meal to each worker in the remote plantations every morning, with vegetables, meat, and carbohydrates carefully costed, measured, and designed according to a notion of a 'traditional diet'. The supplement had become necessary since the outsourcing of all labour in the timber sector in the mid-1990s, which coincided with the political transition and reintegration into globally competitive markets. Productivity and profits were falling, the HIV epidemic was exacerbating losses of human capital, and corporations were under pressure from the state to maintain employment as a political necessity.

1 In Peirce's understanding of semiotics there are three types of sign vehicle: index, icon, and symbol, each of which relates the sign, the object, and the interpretant in a different way. An index points, or refers to its object, dynamically; an icon has a relation of resemblance to its object; and a symbol has a relation to its object established by convention, habit, or rule.

For twelve months, I observed the backbreaking labour of harvesting and silviculture, tracked the calories consumed from kitchen to plantation, and spent time with labourers at home in order to understand the place of food and nutrition within domestic scenes of consumption. The plantation as a site of organised industrial labour articulates with the surrounding former Bantustan areas and the iSimangaliso Wetland Park, a UNESCO World Heritage Site, to create a patchwork landscape of extraction, obligation, and belonging through which workers must travel daily to expend bodily effort in return for pitiful wages that, apart from government welfare payments, constitute the only source of livelihood for most rural households in northern KwaZulu-Natal (see Walker 2005; Surplus People Project 1983).

People there speak about *amandla*, which in isiZulu means strength, power, ability, or efficacy, to index concerns about a range of capacities related to production, reproduction, strength, and fatigue, particularly with respect to the gut and its social meanings. ‘*Amandla*’ itself is a particularly potent word in South African public life, and a polyvalent concept in everyday speech. It invokes the mythology surrounding the nineteenth-century Zulu king Shaka and the modes of power and virility associated with his rule (Hamilton 1998); the anti-apartheid struggle, where it was deployed in an explicitly political way as a rallying cry at funerals and marches (Goodwin 1984; Hirsch 2002); and recent public critiques of President Zuma’s personal life and the politics of redistribution (Robins 2008).

Doke et al.’s ([1953] 2006, 9) English–Zulu dictionary gives as meanings: ‘1. strength, power; 2. moral strength, power, authority, ability; 3. As an idiomatic expression of a man’s virility and semen’. *Amandla* also refers to one’s social and reproductive capacities, as my informants explained to me in the midst of the timber plantations. While we were talking about marriage payments of *ilobolo* (bride wealth), one of my informants complained that the father of her children had been slow in completing his payments: ‘*Hbavu! Amandla awasekobo!*’ (‘Oh! There was no strength!’ Or rather, ‘Oh! He had no power!’). Her exclamation not only points to his incapacity to complete *ilobolo*, it exemplifies how the mutual constitution of the social and material means of reproduction can be stitched together in language. Thus, while its sense as political power is most widely recognized (as in the anti-apartheid call-and-response of ‘*Amandla! Ngawethu!*’, meaning, ‘Power! To the people!’), it carries a range of meanings in different contexts. As capacity, strength, force, or virility, *amandla* is a vital quality of persons, things, and actions. In the timber plantations, I came to understand how *amandla* indexes the shifting imaginative and material efforts to bring into being a form of moral personhood, one that hinges on a set of relations to others variously conceived.

Nutritive substances

During 2009–2010, I was also tracking the proliferation and consumption of a set of popular curatives or supplements that I came to call ‘nutritive substances’. In their stylised advertisement and packaging, they are presented partly as ‘traditional medicine’ (*muthi*) and partly as biomedical pharmaceutical or dietary supplement. One can buy bottles of such substances on almost any street corner or in any pharmacy in KwaZulu-Natal and around the region. Their increasing popularity over the past decade can be understood in direct proportion to the explosion of the HIV/AIDS epidemic and the politics of treatment in South Africa over the past fifteen years. In the last decade, AIDS activists, such as the Treatment Action Campaign, have drawn public attention to the proliferating claims that such substances can cure HIV, amongst other afflictions (Geffen 2010). But the history of the use of these substances is much longer: they have a highly particular place in the archive of industrial labour and population displacement in southern Africa since the late nineteenth century (Flint 2008). They have long troubled the borders between pharmaceuticals and curatives, between biomedicine and custom, between nutrition and poison. Attempts to regulate their circulation, advertising, and consumption have not only been coterminous with the devastating impacts of colonial dispossession and the violent absorption of ‘surplus populations’ into industrial labour through a radical devaluation of all things ‘African’; they were also constitutive in the formation of biomedicine as a domain of rational and civilised governance of health (see Flint 2008; Lingo 1986).

In tracking the movements of a range of commodified curatives across commercial and domestic space, it became clear from descriptions by manufacturers, retailers, and consumers that the substances fall into two types: ‘immune boosters’, which contain a variety of ‘organic’, ‘wholistic’, or ‘complementary’ ingredients; or ‘*izifo zonke*’ (all diseases), for ailments that include sexual dysfunction, sexually transmitted diseases, skin blemishes, fatigue, and ‘opportunistic infections’, amongst many others. While this typology does not capture the variability of semiotic operations across a number of surfaces (bottle labels, flyers, posters, legislation, skin), nor the use of these substances within practices of everyday health maintenance (see Das and Das 2005), the key distinction holds: *izifo zonke* intervene in one’s well-being through their the purgative and emetic properties, while immune boosters merely give strength to *amasosha omzimba* (soldiers of the body, in other words, T-cells, standing for the immune system; see Martin 1994). Naming these various substances accurately and stabilising their referent is precisely what exercised the South African parliamentary committee hearings in 2008 on the draft of the Medicines and Related Substances Control Act: were they to be regulated as food, cosmetics, or pharmaceuticals? The ongoing controversy around the popularity of so-called quack cures for HIV in South Africa is one element in what I understand to be a growing ‘biosociality of the gut’ (Cousins 2015).

By 'biosociality of the gut', I am drawing on Paul Rabinow's (1992) classic essay in which he suggests that the new life sciences would provide the grounds for forming social solidarity around biological metaphors and biomedical conditions. Indeed one of the central images he uses is that of food as a modern biopolitical specification. In this sense the gut, as a key node in the formation of biosociality, has come to occupy a central place in the imaginary of public and private life in South Africa in a number of registers (Bayart 1993; Nugent 2010; Posel 2010). The structural violence of apartheid has been described by anthropologists as producing a kind of hunger-on-a-full-belly; the systematic exclusion, extraction, and exploitation of apartheid drove the vast majority of black South Africans into chronic, structural poverty, producing both periods of acute starvation during the colonial period and a more diffuse lack or hunger founded on extreme inequality (Webster 1986; Wylie 2001).

In South Africa, the biosociality of the gut has been shaped additionally by post-apartheid activism, access to HIV treatment and the role of nutrition therein, land reform, and politicians' public statements. Post-apartheid activism brought attention to the persistent problem of acute child malnutrition that is inadequately treated in state hospitals and welfare services, and understood as a result of increasing unemployment and intensifying poverty (Ashworth et al. 2004; Tomlinson et al. 2007). By the time the HIV crisis was full-blown, a particular biopolitical assemblage had been constructed on the basis of the state's concern with citizens' fair access to nutrition, HIV treatment, and welfare payments (Nattrass 2012; Sanders and Chopra 2006). As a signifier of belonging, inclusion, and redistributive politics within the newly democratic commonwealth, 'land' continues to carry a number of tropes concerning historical redress, agrarian reform, food security, the revival of the peasantry, and the reevaluation of 'custom' as a domain of political contestation (Cousins 2009; Ferguson 2012).

Former president Thabo Mbeki's notorious denial that HIV causes AIDS was accompanied by the Department of Health's promotion of nutrition as an alternative to antiretroviral drugs (ARVs) that, until 2004, were unavailable to most South Africans (Robins 2006). The intense activism and politics of that period overshadowed the growing public recognition of the role of nutrition, not only for general health but also of food as a holistic entity critical for the efficacy of antiretroviral therapy (ART). In the same period, local government responses to acute poverty by handing out food parcels became increasingly controversial, as was the Minister of Health's suggestion that garlic, beetroot, and lemon juice were better than ARVs for combating the deadly virus (Cullinan and Thom 2009).

Healing the gut, repairing kinship

In this context, I had many conversations with activists during 2008 and 2009 who advocated banning these ‘nutritive substances’, as well as with producers, consumers, and retailers of such. The story of one man I came to know reveals some of the issues at stake in their consumption. Pieter was a security guard at a pharmacy in the small town of Mtubatuba, in northern, rural, KwaZulu-Natal, and he told me vivid stories of his various bodily afflictions, mostly told to impress on me the strength with which he endured them without the aid of biomedical pharmaceuticals. Early in 2009, he told me of his battle with a huge, long, translucent, snake in his belly that was robbing him of his good health, his eyesight, and his strength. After many weeks of talking about and around this snake, Pieter revealed that it had been sent by unscrupulous kin relations to kill him because they were jealous of his job and earnings.

We talked about the snake over the following months, where it came from, and how he treated it with the aid of a faith healer (*umthandazi*), various emetic substances (including purified, blessed water), careful traversing of the domestic space, and the precise arrangement of ritual objects and words (see also Case, Menendez, and Ardington 2005). Over time, it emerged that the nurses at the clinic that his employer instructed him to visit had told him about a certain test, and had convinced him to take this test, the results of which confirmed that he indeed had a virus that required him to take certain drugs if he wanted to live. While he never stated that he was taking ARVs, he hinted at it through roundabout turns of phrase and knowing glances exchanged with his friends in the pharmacy. Pieter’s descriptions of his snake, the relatives who wished him ill, and the causes of their jealousy were carefully crafted to avoid specifying genealogical ties. The circumlocutory qualities of such talk about HIV, as well as the hesitation to name those kin suspected of causing affliction, establish the register in which kin relations are placed in question in ordinary efforts to endure crises of well-being in this postapartheid rural landscape (see Steinberg 2008; Posel, Kahn, and Walker 2007).

While the image of a magical snake is both potent and widespread in southern Africa, particularly with respect to its inhabitation of the gut, its treatment by purgatives and emetics through a range of industrially produced chemicals can be traced through a one-hundred-year history of colonial conquest, displacement, and labour migration to urban centres. It is a significant image in southern Africa, but not simply because an indigenous metaphor of an intestinal worm mirrors biomedical categories of gastroenterological distress, such as diarrhoea or constipation, as Green et al. (1994) suggest. Rather, the ethnographic archive shows the development of a technique of the self, more properly of the gut, that seeks to correct social and cosmological disorder through the reordering of relations of the gut. It is a

technique that emerged through more than a century of plural medical exchange in Natal and Zululand during which a diverse array of concepts of and techniques to secure well-being were in circulation (see also Scheub 2010). Pieter's story suggests that 'kinship' is primarily a mode of speaking to and about, and making sense of, events and relations in the flow of everyday life, both social and material, rather than an abstract and metaphysical structure imposed as a set of rules on everyday behaviour (as David Schneider (1968) showed for American kinship). The social significance of events like Pieter's illness, as much as marriage, death, or exchange, is located precisely in the fact that they are not simply one-off moments, but ongoing processes that must be made sense of 'on the fly', both in explaining the past and looking to the future (Agha 2007; Comaroff 1980).

In contemporary South Africa, people speak about impurities in the blood, often having to do with an excess of 'bile', or *inyongo*, that should be 'cleansed' by means of vomiting or purging (Ngubane 1976). While this affliction and its imagery have long indexed the events (and eventfulness) of kinship, more recent techniques and imaginaries of 'boosting' the immune system reveal a blurring of categories and concepts of the body and healing (Last and Chavunduka 1986), indexing the crisis of AIDS deaths and the political controversies over the scientific governance of health (Geffen 2010). It is precisely this entanglement that Pieter's story makes clear: kin relations, bodily malaise, blood impurity, and capacity as a technology of the gut. We might say that the tropes of *amandla*, blood, and impurity allow the mediation of Pieter's kin relations by means of the irritable lining of the gut.

Narrative and the body

Arthur and Joan Kleinman (1994) suggested two decades ago that there is a persistent problem in the social sciences concerning the relationship between 'illness narratives' and the bodies around which they are spun. Illness narratives are typically understood to be a way for a person affected by an illness to make sense of his or her experience, and, since Arthur Kleinman (1988) and Byron Good's (1994) early elaboration, the concept has been applied in diverse social situations (see for example Glick and Applbaum 2010; Livingstone 2012; Meyers 2013). Many scholars have found illness narratives a useful tool for complicating the nature/culture dichotomies that endure in global health programming on HIV, particularly in epidemic South Africa (Fassin 2007; Ezzy 2000; Levy and Storeng 2007; Gilbert and Walker 2009, Parsons 2012). That critique has shown how experiences of illness are deeply embedded in social histories and political economies, and in structural exclusion and violence; they also show that the particular forms of oppression established by exclusion and violence shape the phenomenological grounds of healing and the meanings of health and well-being.

Yet we still do not fully understand the public and private effects of the disease on the lives of those whose HIV-positive status introduces the shadow of death into everyday life, whether as a chronic social condition or a crisis of immunological failure (Henderson 2012, 2013). Is it that the relationship between the experience of the epidemic and the memory of that experience are inadequately understood in their material and enfolded modes? Didier Fassin's (2007) suggestion, that the structural violence of colonialism and apartheid are embodied in the construction and collective experience of HIV in post-apartheid South Africa, is an attempt to find an adequate integration of the bodily and the phenomenological, the somatic and the psychic. Elizabeth Wilson's (2004) argument concerning the psycho-neuro-enterological relays between the gut and the brain opens up a different set of questions: What happens to the concept of the illness narrative when placed alongside new concepts emerging from the science of the gut? How might we understand Pieter's narrative in the context of his experience of HIV and the structural difficulty of feeding and caring for a sick body, given the specific history of dislocation in KwaZulu-Natal and its enduring traces in post-apartheid South Africa?

Kleinman and Kleinman (1994, 708), writing about memory, criticise scholars for avoiding the question of what mediates or transforms the social and the corporal: 'What are the interactive processes through which societies remember? How does societal memory tangibly work? How is it socially experienced?' The question of how to relate the body and society, they argue, is also a question about the borderland between subjectivity and the symbolic order, agency and social control, experience and representation: 'The failure of analysis extends to a larger track of problems in the human sciences that runs between the collective and the individual' (708). To be sure, there has developed a substantial literature in anthropology seeking to overcome the Cartesian assumptions often made about the relationship between culture and nature, mind and body, with a range of approaches to embodiment having been staked out, from Mauss (1973) to Bourdieu (1980) and beyond (Csordas 2002; Desjarlais and Throop 2011; Kuzawa and Sweet 2009). A very different approach to rethinking the relationship between psyche and soma is offered by Elizabeth Wilson (2004, 2011), whose reappraisal of Freud's early biological research on nervous systems and recent interdisciplinary work in neuroenterology suggests the gut as a possible tool with which to critically reassess the relationship between the individual and the collective, and between the narratological and the physiological.

Nerves and plasticity

Wilson's reappraisal spurs us to ask how the enteric nervous system innervates the digestive tract: How does this system regulate, and how is it regulated by, psychological events? She claims that psychoanalysis has had plenty to say about the psychology of the openings of the

digestive tract (orality, anality) but much less about the processes in between. Despite the large amount of clinical and anecdotal evidence that points to the highly mobile and sensitive psychological quality of the gut, the psychodynamics of this part of the nervous body remain understudied (Wilson 2004, 33).

The enteric nervous system (ENS) is a complex network of nerves that encases and innervates the digestive tract from the oesophagus to the anus. The ENS is anatomically extensive: the small intestine in humans has as many neurons as the spinal cord. Gershon writes: 'add on the nerve cells of the oesophagus, stomach, and large intestine and you find that we have more nerve cells in our bowel than in our spine. We have more nerve cells in our gut than in the entire remainder of our peripheral nervous system' (cited in Wilson 1994, 34). The ENS is anatomically and biochemically more similar to the central nervous system (CNS) than it is to any other part of the peripheral nervous system to which it belongs. Unlike other parts of the peripheral nervous system, the ENS may act independently of any impulse received from the CNS. For these reasons, the ENS has been variously named 'the brain of the gut', 'the enteric minibrain', and 'the second brain' (see Wilson 2004, 101 fn3). Philosophical engagements with neuropsychology have produced a range of perspectives, from questions about mind and intuition (Damasio and Damasio 2006) to politics and perception (Connolly 2002, 2006) and embodiment and affect (Leys 2011).

One such critical engagement with neuroscience is Catherine Malabou's (2008) work on the malleability of the brain itself. The dominant concept of the neurosciences, she claims, is plasticity: 'plasticity directly contradicts rigidity. It is its exact antonym. In ordinary speech, it designates suppleness, a faculty for adaptation, the ability to evolve'. The word's Greek root has two basic senses: the capacity to receive form (clay is 'plastic', for example), and the capacity to give form (as in the plastic arts or in plastic surgery). Thus, the 'plasticity of the brain' suggests it is modifiable, 'formable', and formative at the same time (Malabou 2008, 5). Noting the other meaning of 'plastic', namely the substance made of nitroglycerine and nitrocellulose, capable of causing violent explosions, she writes: 'plasticity is situated between two extremes: on the one side the sensible image of taking form (sculpture or plastic objects), and on the other side that of the annihilation of all form (explosion)' (5). Malabou is particularly interested in what it might mean for politics, economics, and social life in general, if the plasticity of the brain is fully appreciated. Thus if we take such a philosophically and psycho-neuro-enterologically rich view of embodied processes of cognition, memory, and healing, we can then ask how the body and definitions of health might be sensitive not only to 'context' in a general sense, but also constitutively and materially imbued by practices of meaning-making in highly specific ways.

Turning a controversy inside out

In South Africa, the proliferation over the last twenty years of ‘immune boosters’ and cure-alls – working all of the semiotic possibilities of traditional medicine and biopharmaceutical supplementation – in concert with the apparent madness of the former president’s advocacy of nutrition over ‘pharma’, prompted the Academy of Science of South Africa (ASSAf) to commission a report synthesising the best medical literature on the relationship between nutrition, HIV, and TB (ASSAf 2007). The review revealed that the gastrointestinal tract is a major anatomical frontline of HIV, and that lymphocyte activation in the gut is a key step in the CD4 T-cell depletion that defines AIDS.

In addition, gastrointestinal mucosa and other mucous membranes were recognized as occupying a ‘unique anatomical niche: the interface between a sterile, internal environment and a contaminated, external environment’; these epithelial cells have ‘a polarity . . . that is different from all other tissues, in which one side of the epithelial cell faces “self”, whereas the other side faces “non-self”’ (Kotler 2005, 107), and have a special role in the production of CD4 T-cells. Based on these findings, the report concluded, ‘Together, these insights have major implications for our dawning understanding of the intersection between nutrition and HIV/AIDS, both in terms of the potential impact of HIV infection on nutritional status, and in redefining our conceptions of how nutrition intervention might impact on HIV/AIDS pathogenesis’ (ASSAf 2007, xvi). While the report intended to resolve the controversy on the role of nutrition in HIV and TB, the fact that it was released when Mbeki’s tenure appeared all but over, with the prospect of a new political dispensation and thus new health policies on the horizon, somewhat mitigated its political impact. Indeed, in 2008, the new Minister of Health introduced a slew of new policies that made free ART available to all South Africans, inaugurating a new era of cooperation between community activists, NGOs, and the state.

In addition to the new insights into the gut and its role in immunonutrition, the past decade has produced new understandings of a range of other bodily functions and processes that challenge conventional categories for conceiving the body and its sociological truths. For example, in 2011 it was discovered that the microbiome of the gut can be mapped into three basic types, called ‘enterotypes’, whose purpose and function remain largely unknown (Arumugam et al. 2011). The finding brings questions about the role of diet, food regimes, and other environmental influences that shape health outcomes closer to the philosophical questions raised by George Canguilhem (1989) about the body’s capacity to define its own norms, thus relativizing notions of health. In early 2012, the Gates Foundation launched a new ‘Grand Challenge’ grant programme, with US\$9 million in funding, to study gut function biomarkers. By identifying and validating such biomarkers, the foundation hopes to

improve the delivery of global health interventions, especially for children in the developing world, that hinge on good and proper functioning of the gut.²

The last five years have produced so many breakthroughs in scientific understanding of the human microbiome and its role in health and disease that not only have major research programmes been launched (such as the Pathomap, Human Microbiome Project, and American Gut Project), but many popular debates have arisen concerning the centrality of the gut microbiome to ordinary life (see, for example, Cohen 2013; Junger 2013; Mullin and Swift 2011; Shapin 2011; see also the website for Gut Microbiota for Health, <http://gutmicrobiotaforhealth.com>).³ In a different register, spikes in global food prices since the early 2000s have been discursively framed not only by climate and credit markets (Rouby 2012) but also by the struggle of the world's poor to survive on unavailable basic staples that then necessitate international famine relief that is now based on 'nutraceuticals' and 'functional foods' (Kaplan 2007; Chen 2009; Frye and Bruner 2012).

It seems likely that as the flood of new research into the human microbiome and gut functioning proceeds, Wilce and colleagues' (2003) semiotic reading of the 'social lives of immune systems' will become more compelling as an interpretive framework for understanding the material and cognitive processes involved in the psycho-neuro-enterology of the gut. For example, Pennebaker (2003) shows that narratives have a direct bearing on health and immunocompetence, while Booth and Davison (2003) argue that major histocompatibility complex (MHC) molecules are themselves sign vehicles whose task it is to carry antigens to T lymphocytes. Thus, for Wilce (2003, 6), the semiotic term 'vehicle' takes on a semiliteral sense in the role MHC molecules play in binding processed antigens and presenting them to T cells. Thus they argue that microbiological material carries significance for bodies, lives, and immune systems, both human and non-human, a line of enquiry pursued since by anthropologists such as Helmreich (2009), Paxson and Helmreich (2013), Alaimo (2010), and Bennett (2010).

2 The programme is described on the Grand Challenges for Global Health website: http://www.grandchallenges.org/biomarkers/pages/gut_function_biomarkers.aspx.

3 In 2014, several panels on the microbiome were organised for the annual American Anthropological Association meeting.

Substance and event

By moving from the particular context of Pieter's ingestion of purgatives and ARVs in a small town in KwaZulu-Natal to the national politics of HIV in South Africa, and then to the assemblage of technoscientific claims concerning the qualities, properties, and functions of the gut, I am interested to draw out two concepts: substance (both what is ingested and that which does the ingesting) and event. If we follow ethnographic material from the events of kinship to the events of the gut, we can then think through 'the event' in at least three ways: the specific actions directed at the gut via purgatives or emetics; the more regular, ordinary dietary processes; and the trauma of political violence in everyday life (see in particular Veena Das's (1995, 2007) work on the eventfulness of the ordinary under conditions of extreme collective violence).

If the nutrition intervention in the timber plantations in KwaZulu-Natal was not solely about augmenting labourers' capacity to be more productive and thus profitable, but also an ethical response by a large employer to a humanitarian crisis of poverty and disease, as they claimed, the capacities indexed by the ingested substances point to an array of projects – ethical, capitalist, and more – that come together in the gut of the worker. Concerns with bodily strength, power, and capacity extend beyond labour power and profit as abstractions; they relate to the future availability of that labour with its specific abilities. Thus for the worker, one's capacity to endure is a matter not only of dietary and bodily regimes of well-being, but also social and governmental orders of life (Foucault 2008). *Amandla*, then, indexes a thick set of relations and bodily orientations that are hinged on particular aspirations and horizons, bringing together imaginative and material questions of what it takes not merely to endure, but to live and to thrive – and, morally, to bring into being the self that is the object of one's behaviour (Foucault 1990, 26; Povinelli 2011).

In tracking the histories of nutritive substances in South Africa, I have followed the concept of 'substance' as it travels between social theories of relatedness and recent advances in biological understandings of the gut. Ingested substances, passing through the gut, intervene in those episodes in which kin, bodily health, and labour capacity are thrown into question, thereby enabling direct action at the critical site in which nature and culture meet. The assemblage of gut/food/nerves/kin/labour and so on prompts the question of how we might understand the ways in which the body bears the traces of structural violence and the breakdown of social relations.

Janet Carsten (1995) has shown how the concept of 'substance' has been critical to the study of kinship, and, in her own ethnographic work, how kinship, reproduction, and the gut come together in the sharing of substance through digestion – that is, the transformation of rice

into blood as the substrate of relatedness. Subsequently, Carsten (2004) reflected on how anthropologists have used the concept of ‘substance’ in very different ways to make sense of the particularities of ethnographic data. Indeed, many have adopted this notion to look at kinship in more processual terms. She notes that ‘substance’ has been a kind of catch-all term, used to trace the bodily transformation of food into blood, sexual fluids, sweat, and saliva, and to analyse how these pass from person to person through eating together, living in houses, having sexual relations, and performing ritual exchanges (Carsten 2004, 109). Rather than the given substrate of kinship relations, she shows that the constructed character of any substance varies from one cultural context to another (Carsten 2004). How, then, might we consider the absorption of nutritive substances through the gut in relation to concepts of blood (*ugazi*), bile (*inyongo*), and strength/capacity (*amandla*) that shape isiZulu expressions of well-being, notions of relatedness, and practices of health seeking?

From a very different perspective, Elizabeth Wilson (2004) reads the new science of the gut in relation to the early writings of Freud (and others), in order to consider the shifts in understanding of the relationship between the biological/neurological and the social/psychological as they are mediated by the enteric system. Both Carsten and Wilson problematise the old question of the relation between nature and culture in new ways, which are helpful for conceptualising how nutritive substances, as they circulate in KwaZulu-Natal, make it necessary to consider how the body, the social, and the political are enfolded within notions of health and disease, as we might encounter them in the illness narrative of someone like Pieter. As one begins to think *with* the gut, it becomes imperative to consider the mutual absorption of nature into culture and culture into nature within processes of health and disease. We can neither assume that processes of health and disease are purely social constructs, nor can we take nature to have an autonomy from the social.

The history of the everyday substances, and their use in the lives of those suffering from the structural violence of colonial and apartheid governments, can help us understand their consumption not as grand gestures responding to particular acts of violence but as responses to ‘chronic cruddiness’, and the physical wearing out and deterioration that constitutes the ‘slow death’ of poor South Africans (Berlant 2007; Povinelli 2011). The consumption of nutritive substances, and their use as tropes of productivity, strength, capacity, and purity, are particular to the South African experience of industrial labour and disease and the regulation of traditional medicines – even while they also put into circulation a set of travelling tropes concerning fatigue, immune system functioning, and cosmopolitan aspirations (see Burke 1996). Rather than rendering their consumption as an expression of irrationality or alienation, I suggest that they reveal something of the manner in which ongoing violence is folded into everyday concerns with health, production, and reproduction.

The substance of kinship

Pieter's story of kin relations and bodily malaise is striking partly because it accords with a view of kinship that does not take 'kinship structure' to be an abstract and permanent feature of 'society', but rather as a reflexive reckoning with events within an available language that allows one to speak of relations and their situations, and the appropriate feelings, gestures, and actions that they elicit (Agha 2007; Goodfellow 2015). When we begin to think kinship with the gut – that is, when we approach the boundaries that define kin relations as irritable, permeable membranes, one side facing self and the other facing out – it makes sense to think of the membrane as having always been the substance of Zulu kinship, that is, to think of relatedness as an ordinary, material concern that must be mediated by means of a boundary. (And here I take 'Zulu kinship' to be a product of colonial experience as much as it is a creative response made with available tropes and terms (Landau 2010)).

Pieter's actions on his gut influence the neuronal, immunological, and microbiological milieus in which a vision of an ethical self and harmonious (or at least liveable) kin relations is effected. The event of purging the snake, and its effects, ties together Pieter's experiences of diarrhoea, popular curatives, biomedical pharmaceuticals, and ritual action. In this way, the eventfulness of the gut may turn out not to be exceptional, but rather its basic, constitutive mode of operation. This observation brings together the ordinary, as Stanley Cavell (1994) and Veena Das (2007) articulate it, with a concern for well-being. Cavell discusses human action and the difficulty of securing its success, and how we live with the knowledge that we sometimes fail to secure the meaning of our actions. In Das's rendering, the ordinary is less about habitual or common experiences or actions than about securing the meaning of one's words given the propensity for our utterances to misfire or be misconstrued, despite our best efforts. Pieter's actions and explanations thus can be understood as an attempt to secure the meaning of health and of kin relations across linguistic and bodily registers of action as they come into question in everyday life.

If the gut is indeed a second brain in no way secondary or peripheral to the central nervous system, and if the neurology of the gut is inadequately theorised in relation to the kinds of psychology that might be at stake (as Wilson [2004] suggests), then, to paraphrase Malabou's (2008) insight into the plasticity of the brain, we might say, 'The gut is a work, and we do not know it'. Does the gut possess the same plasticity as the brain? Does there exist a similarly constitutive historicity of the gut? Should we even be asking the same question that Malabou asks of the brain: What *should* we do with our gut? (We might as well pose the question's other inflection: What should we *do* with our gut?). Is there a specific consciousness of the gut, in some psycho-neuro-enterological relationship with the everyday that we should be formulating?

Mediations

Rabinow's fertile prediction that a transformation in concepts of nature and culture would emerge from the life sciences would appear to be half right: biological and biomedical knowledge do indeed draw on social metaphors in ever-thickening ways. However, rather than simply producing decontextualized individuals whose subjectivity is irrelevant to the new genetic and epidemiological tools that threaten to transform society, the new knowledge of the gut suggests that our concepts of psyche and soma, self and other, social and natural, are inadequate for the material (and the materiality of the gut) that is at stake. Recent ethnographies of biological citizenship have shown how the self, the subject, and the person powerfully give shape to new forms of biosociality in unpredictable ways (Petryna 2002; Nguyen 2010), even as the conventional rhetoric of self–nonself distinctions in immunology come under renewed critique from anthropologists and immunologists alike (Lyon 2003; Wilce 1998, 2003; Tauber 2000).

If the illness narrative as a tool helps to shape and give order to the elements of experience and its human or ethical trajectory, what place does the gut assume within such a relational model of understanding pain or chronic illness? Why might it be important for an anthropology of the gut to take narrative and its context as only one element among concatenating and mediating concepts of inner/outer and personal/collective, and of the various forms of subjectification and governmentality that emerge from transformations in diet, biomedicine, and public health regimes? And finally, if a semiotically informed reading of immune system functioning already exists (see Wilce 2003), why worry about narrative and its relationship to context? Gastroenterologists and neurologists have already, in a sense, joined forces to produce a theory of milieu, of relations between outside and inside, and of absorption, on the basis of not only neuronal and nervous relations but also the biological diversity of species of flora.⁴ How can this perspective help us rethink the body and narrative?

4 The relatively recent medical understanding of the gut and its functioning has proceeded clinically by means of the concept of the pathological (see Miller 2011; Canguilhem 1989), but the increasingly accurate mapping of species diversity within the gut appears to pursue a more normal, or more normalised, kind of structuralism in which the relationship between general and specific is mediated by means of the concepts of 'species' and 'individual' and their idiosyncratic norms.

Toward an anthropology of the gut

How then to understand Pieter's illness narrative – his talk of a snake in his stomach as an explanation for the uses of various substances to mediate the involvement of his kin in his gut? I suggest that his struggles with health and ill-being, his ingestion of life-giving pharmaceuticals, and his habits of bodily intervention together establish new norms, both for the management of the disease that wracks his body and for the milieu of the gut that mediates his actions. They refocus our attention away from static or structuralist renderings of the gut and the virus (implicit in the concept of a 'functional disorder') towards looking at the shifting, contingent, and calibrated relations located in everyday efforts to secure life.

It is here that *amandla* – as a 'shifter' (Silverstein 1976) indexing several registers of speech and action – reveals the centrality of 'capacity' and 'strength' as tropes through which to secure health and its meanings as material and enfolded concerns. Rather than simply 'making sense' of an illness experience, the illness narrative can be used to illuminate the zone of exchange between nature and culture, in which the gut acts as a mediator of experience. As the authors of the volume edited by Wilce (2003) argue, immunity and disease are in part socially constituted, and thus immune systems function not just as biological entities, but as mediators of politics, economics, social systems, illness events, and more – of the context of life itself. I propose that we think of the gut as a particular kind of mediator of social relations, and as an important anthropological object of enquiry. I take Wilce and colleagues' semiotically informed reading of the cultural and social lives of immune systems as supportive of such a project, because it offers a way to understand experience in relation to the conditions for life, understood both intrapersonally and collectively. It is precisely that mediation of inner and outer, and of the traditional, 'scientific' divisions of nature and culture, that the gut offers.

By framing an anthropology of the gut in these terms, I argue that narratives and bodies, psyche and soma, locality and biology, find 'extension', to use Claude Levi-Strauss's (1970) term, in the internal frontier of the gut. Conceiving of the gut anthropologically – not simply as an object of biomedical regulation or even the subject of an illness narrative, but as a semiotic mediator for new political logics, epistemic operations, and material conditions (Law 2007) – would take us beyond vague appeals to experience or embodiment and towards a material semiotics of life.

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Therefore, there is full mediation (Baron and Kenny 1986): absorptive capacity fully mediates the relationship between training and organizational performance (hypothesis H1, Fig. 2). In addition, the evaluation of the structural model shows a good fit (GoF: 0.62), high consistency (R2: 0.54 for model b is still better than model a, which is additional support for the mediating role of absorptive capacity), accuracy predictive relevance (Q2: ACAP 0.31; Q2: ORGP: 0.44): all parameters.