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ORIGINAL ARTICLE

Non-human matter, health disparities and a thousand tiny dis/advantages

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Abstract

The materialist thread within health sociology has observed a clear gradient linking inequalities in health with measures of social class and poverty. More recently, Bourdieu's approach to social class complemented the 'economic capital' of Marxist analysis with 'symbolic' capitals such as 'social' and 'cultural'. However, efforts to assess how symbolic capital interacts with health disparities reveal complex or contradictory effects. In this paper, we re-materialise the study of health and social position via a new materialist focus on the interactions between humans and non-human matter (NHM). We analyse empirical data to disclose the range of human/NHM interactions in daily life, and how these affect people's health status. These interactions establish physical, psychological and social opportunities and constraints on what human bodies can do, contributing to relative advantages and disadvantages. We argue for a revised materialist understanding of sociomaterial position as constituted by a 'thousand tiny dis/advantages', and suggest that health and wellbeing are inextricably linked to dis/advantage.

INTRODUCTION: SOCIAL CLASS AND HEALTH FROM HISTORICAL MATERIALISM TO SYMBOLIC CAPITAL.

This paper reports data from an empirical study that addresses a gap in the sociological literature on social position and health disparities. This concerns how interactions between human bodies and

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non-human matter (NHM) can produce social advantage and disadvantage (henceforth, ‘dis/advantage’) that may translate into opportunities or constraints on what a body can do, in turn affecting human health and wellbeing.

The association between social position and health inequalities documented in early studies by sociologists and epidemiologists (Doyal & Pennell, 1979; Navarro, 1976; Townsend and Davidson, 1982) continue to be seen for mortality and a wide range of morbidities in recent scholarship (Bambra et al., 2020; Marmot & Bell, 2012; Scambler, 2012). This association has been observed in low-, middle- and high-income countries, though the poorest of the poor have the worst health (Marmot, 2005). Meanwhile, a critical materialist thread has sought to explain the interaction between capitalism and ill health. For Scambler (2007: 299), the social relations between capital and labour ‘underwrite’ health inequalities. These relations have become more polarised as globalisation and neoliberalisation of markets reduced working class control of the labour process, decimated welfare systems and increased wealth inequalities within and between national economies: all of which contribute to disparities between rich and poor (Coburn, 2004; Navarro & Shi, 2001; Scambler, 2012: 143). This association between societal income inequality and health disparities is strongly supported by empirical data comparing a range of global North jurisdictions (Pickett & Wilkinson, 2015: 317). However, Pickett and Wilkinson consider social status rather than material factors as the intervening variable between class and health, arguing that evidence shows that ‘psychosocial factors, such as social capital and trust’ are more significant than material factors (ibid: 322, see also Szreter & Woolcock, 2004. For a detailed critique see Dorling, 2015).

This latter position may reflect a broader shift in sociology away from neo-Marxist class theory towards ‘cultural’ perspectives on social position, most notably in the work of Bourdieusian stratification theorists (Skeggs, 2015). In Bourdieu’s (1984, 1986) theory of inter-generational class reproduction, individuals and groups accumulate varying stocks of *symbolic* assets such as culture and education (or ‘cultural capital’) and social networks (‘social capital’). Along with economic resources, these stocks of social and cultural capitals may then be drawn upon to establish distinctiveness from others, and hence achieve and sustain privilege or other social position (Bourdieu, 1984: 114; Savage et al., 2013: 223; Toft, 2019: 112). Some recent empirical studies of social position have adopted this approach to modelling stratification in contemporary societies. The BBC’s *Great British Class Survey* (Savage et al., 2013), for example, used statistical analysis to define seven discrete classes from their specific mix of economic, social and cultural capitals (ibid: 230).

These inductively generated ‘classes’ are nominal rather than ordinal, undercutting opportunities to model a class gradient in health. Despite this, some scholars have sought to test how and to what extent symbolic (social and/or cultural) capital might contribute to the production of health disparities. These latter studies paint a contradictory picture. Carpiano (2007) found that social capital can be associated with both positive and negative health outcomes, while Khawaja and Mowafi’s (2006) study of low-income Lebanese women noted that good social support was associated with general health status but not with mental health. Story (2014) concluded that social capital could increase uptake of professional delivery care but inhibited use of antenatal care. Christensen and Carpiano’s (2014) study of body weight suggested that stocks of cultural and social capital were associated with higher BMI (via interest in cooking), but also with lower BMI through regular exercise. Villalonga-Olives and Kawachi (2017) perceived a ‘dark side’ to social capital, in which a ‘social contagion’ of unhealthy behaviours could emerge in highly networked groups, especially among young people.

Such conflicting findings raise questions about what part symbolic capital plays in the production of health disparities. In this paper, we argue that this latter ‘cultural turn’ distracts attention prematurely from the wide range of daily interactions that humans have with a vast range of non-human matter (NHM) – from houses and their contents, motor vehicles and work tools/technologies through

to soil and air, the natural and built environment and even the Sun and wind – and the impact these have upon health.

Our intention in this paper is to correct this lacuna. Rather than returning to a historical materialist sociology of class, we shall develop this analysis via a new materialist concern with matter's capacities to affect and be affected. (The following section sets out the broad theoretical basis for such an approach.) Secondary analysis of qualitative and quantitative empirical data on health, wellbeing and everyday lives suggests that material interactions with NHM are productive of 'a thousand tiny dis/advantages', and that health and wellbeing disparities are tied inextricably to the material production of dis/advantage. This, we would suggest, makes an important contribution to the literature on the social determinants of health inequalities – emphasising the cumulative effects of daily life on both social dis/advantage and health status, while also questioning the relevance for this field of study of the recent focus in stratification theory on symbolic capitals.

A NEW MATERIALIST APPROACH TO HEALTH AND DIS/ADVANTAGE

New materialist ontology is now an established paradigm within the social sciences, which has been applied to a variety of topics, including health and wellbeing (Duff, 2014; Fox, 2012). It covers a range of different approaches from actor-network theory to posthuman feminism (Fox & Alldred, 2019), and we shall not attempt a comprehensive survey of this scholarship here.¹ For this study, we use a conceptual toolkit from one such new materialism: the Spinozist 'ethology' developed by Gilles Deleuze (1988: 123–127). This choice reflects the extensive use of this approach by social theorists seeking to apply a critical perspective to the social world, including on issues of gender, race and continuity/change (Bennett, 2010; Braidotti, 2011, 2013; DeLanda, 2006, 2016; Grosz, 1993; Saldanha, 2006) and by those researching a variety of sociological topics (Coleman & Ringrose, 2013; Fox & Alldred, 2017). In the following brief review of the new materialisms, we consequently address explicitly four Deleuzian concepts that we shall use both theoretically and methodologically: matter, affect, capacity and monism.

First, by shifting attention back to *matter*, the new materialisms have been considered an antidote to sociology's 'cultural turn' and post-structuralism (Coole & Frost, 2010: 7), while its focus on materiality moves significantly beyond previous concerns with material 'law-governed processes' (Cheah, 2008: 143) in Marxist historical materialism. Rather, this new 'turn to matter' focuses on the 'more-than-human' aspects of the social and physical world. This, it has been argued, is of particular significance when addressing issues such as environment and climate change, disability, gender and health (Dorling, 2013; Paton et al., 2017). Moreover, 'materiality' extends beyond bodies, physical things, spaces and places, and material forces such as gravity to encompass other items such as abstract concepts, human constructs and human epiphenomena such as memory or imagination that – while 'immaterial' – also possess a capacity to materially affect (Braidotti, 2013: 3). This formulation of materiality cuts across a conventional 'matter/meaning' dualism (Barad, 1996: 181; Colebrook, 2008: 59).

Second, by eliding the conventional distinction between physical and social worlds in this way, new materialism opens up the possibility to explore how things other than humans (for instance, a tool, a technology or a building) can be social 'agents', making things happen. 'Affect' – defined by Deleuze (1988: 127–128) as a 'capacity to *affect* and be affected', is a feature of all matter: human and non-human, animate and inanimate. For some new materialist scholars, matter is invested with a vitality or liveliness, as opposed to being inert and passive (Bennett, 2010; Colebrook, 2008). This

understanding of 'affect' is ontologically relational: a capacity of an item of NHM such as a building or an orange to *affect* must coincide with a body's capacity to *be affected*, or *vice versa*. Matter may be affected physically, and in the case of humans, psychologically, emotionally or socially.

Third, new materialists regard the material world and its contents not as fixed, stable entities, but as uneven and in flux, emerging in unpredictable ways around actions and events (Potts, 2004: 19). Human bodies and all other material, social and abstract entities have no ontological status or integrity other than that produced when assembled with other similarly contingent and ephemeral bodies, things and ideas (Deleuze, 1988: 123). Consequently, we must ask of a body, an object or an abstraction not what it is, but what it can do in a specific context: what are its *capacities*? Capacities may be 'positive', enabling actions, thoughts or desires, or 'negative': constraining a body's possibilities – as such, 'capacities' are themselves potential affects.

Finally, this ontology of affect cuts across a number of dualisms common to much social theory. As already noted, it elides the human/non-human distinction concerning agency, while the broad understanding of materiality (as also noted above) cuts across mind/matter and culture/nature dualisms (Braidotti, 2013: 4–5; van der Tuin and Dolphijn, 2010: 26–27). This *monism* in new materialist ontology extends further. It rejects conceptions of 'another level' of reality (or a foundational or transcendent power or mechanism) operating beyond or beneath the surface of everyday activities and interactions (Fox & Alldred, 2018). This dissolves agency/structure and micro/macro dualities (DeLanda, 2006: 10, 32–33). Instead, there are simply 'events' – an endless cascade of material interactions that produce both the natural and the social world, our lives and human history. This 'flattened' monistic ontology does not, however, deny the effects of governmental policies and laws, and of societal and economic forces conventionally described by terms such as 'patriarchy', 'neoliberalisation' and 'class'. Rather, it explores how these forces affect bodies at the level of daily events, as part of a messy, heterogeneous and emergent social world (Braidotti, 2011: 137; Grosz, 1993).

These four concepts (which we use to investigate our data later in the paper) have profound ontological implications for the subject-matter of our inquiry. New materialist ontology requires that we consider social position not as a relatively stable attribute of an individual produced by socioeconomic forces and/or cultural dispositions, but as the outcome of matter's capacities to affect and be affected. Social position is not stable or unitary, but comprises a 'thousand tiny advantages and disadvantages' produced by people's quotidian interactions with both other humans and with NHM.² Bodies gain context-specific, emergent *capacities*, some of which advantage or disadvantage their relative sociomaterial position: for a day, a month or a lifetime, and are the basis for both temporary and enduring social divisions and inequalities.

Meanwhile, 'health' also needs to be re-thought, not as an attribute of a body, but relationally: as an engagement with the material world that establishes what a body can do (Duff, 2014: 75). Health is consequently the 'actual measurable capacity to form new relations' (Buchanan, 1997: 82). These include both human-to-human relations and a wide range of relations with NHM. The data reported later supplies empirical evidence for this relational understanding of health. Thus re-defined, it follows that 'health' and 'sociomaterial dis/advantage' are intricately linked: health or ill health may enhance or diminish a body's capacities to engage with the social world, while sociomaterial advantage or disadvantage may respectively establish or constrain physical and mental wellbeing. Health disparities thus are intertwined (possibly inextricably) with the differential production of sociomaterial dis/advantage in contemporary societies.

DESIGN AND METHODS

This ontology translates directly into a methodology for exploring sociomaterial dis/advantage and health. The study's aim was to explore how human interactions with NHM affected capacities

positively and negatively, and how the consequent advantages and disadvantages produced by these capacities articulated with health and wellbeing. We report analysis of data from two datasets not previously linked. The South Yorkshire Cohort (now re-named the Yorkshire Health Study) was a postal survey of 27802 patients, accessed via GP surgeries from 2010 onwards. Data gathered included the EQ-5D instrument, which provides a descriptive profile of a respondent's health, based on self-assessment of mobility, self-care, usual activities, pain and anxiety/depression. Also included were measures of consultations with health professionals, days lost from sickness, details of chronic conditions, and demographic and biological data.

Subsequently, 45 adult respondents from this dataset were recruited for a qualitative study (the 'Families Study') that focused on food and diet but gathered data in wide-ranging face-to-face interviews using the 'free association narrative' approach of Hollway and Jefferson (2000: 53). The first interviews focused on background data on respondents' daily lives and were the main source of data analysed here. Second interviews focused on food practices and, though fully coded, were less relevant for the present research question. NHS ethics approval was granted for the original cohort and Families studies, with subsequent ethics approval for this secondary analysis obtained from the University of Sheffield.

NVivo was used to fully code the qualitative transcripts for all respondents. Coding used the new materialist concepts described earlier to identify: relations with humans, NHM and places/spaces; descriptions of how these relations affected or were affected by respondents; and positive and negative capacities produced by these interactions. All respondents and locations in interview extracts have been pseudonymised or redacted.

Both for the simple quantitative analysis we conducted and to identify case studies of respondents in good and poor health, we established two subgroups from among the 45 respondents, using the data on health status gathered in the original South Yorkshire Cohort survey. Respondents with a score of 1 on the EQ-5D (no limits on daily activity), no chronic health conditions and 12 days or less time lost for sickness in a 3-month period were categorised as in 'good health', while those with an EQ-5D of under 0.75 (range 0.75 to 0.09) and a chronic condition were classed as in 'poor health'. This stratification provided a total of nine respondents in good health and nine in poor health.

FINDINGS: NHM, SOCIOMATERIAL DIS/ADVANTAGE AND HEALTH

In this section, we first report the range of interactions that respondents reported with humans, with NHM and with spaces/places, followed by examples to illustrate how they affected and were affected by NHM, and the positive (enabling) and negative (constraining) capacities that respondents described. We then present four case studies that explore how these interactions assemble with material dis/advantage and with health opportunities and constraints.

Interactions with humans and NHM

Respondents reported a range of human interactions with family members (spouse, siblings, parents); friends and neighbours; work colleagues and employers; employees (cleaner); retailers (supermarket; butcher; food and drink outlets); teachers; health professionals (doctor; health visitor; pharmacist); other services (hairdresser; gym). They also reported interactions with collective human organisations and institutions, including workplaces (Coal Board, Royal Mail); companies and businesses

(Slimming World, Forestry Commission); educational establishments; sports and entertainment organisations (football clubs, theatre, rock band); food businesses, clubs and societies (gardening, ballroom dancing, Working Men's); health and fitness organisations (NHS, hospital).

Interviews supplied data on a multitude of relations with NHM in respondents' everyday lives. These included (with some examples) the following:

- housing and homes, and associated spaces (gardens, sheds, static caravans);
- household contents (furniture and fittings, appliances and kitchen equipment, consumer technology, toys);
- workplace materials (tools, office equipment, stationery, technology);
- food and drink;
- monetary resources, wages, pension;
- consumer goods (clothes, technology, sports goods, DVDs etc);
- health products, medicines and equipment (bathroom scales, fitness equipment, Epipen, tablets, insulin);
- transport (cars, trains, buses, caravans);
- pets and other animals.

In addition, respondents reported a range of general and specific (named) places and spaces with which they engaged as part of their daily life:

- local neighbourhoods, streets, villages and towns;
- green spaces (parks, countryside, lake)
- factories, offices and other workplaces;
- educational and health establishments;
- sports and fitness facilities or meeting places (Bannatyne health club, London Marathon);
- entertainment and sports venues (Sheffield United; Plowright Theatre)
- specific locations in UK or overseas, including named businesses and retailers (Asda, Tesco, etc.).

These NHM and places/spaces interacted affectively with respondents variously, at work and in domestic settings. In Box 1, we offer illustrative examples of ways in which respondents *affected* NHM, and how they were *affected by* NHM. Box 2 gives examples of the positive and negative capacities that these NHM affects produced in respondents. Table 1 summarises the numbers of positive and negative capacities coded for good and poor health respondents. Those in good health had statistically significantly higher levels of positive capacities (chi-squared test = 7.7; $p = 0.005$) than poor health respondents.

CASE STUDIES

Case study 1: #8 'Laura'

At the time of the interview, Laura was 31, married with two children, with a degree in environmental studies. She was in good health, with an Eq5 score of 1 (no constraints on everyday activities), no underlying conditions and no days off sick in the three months before recruitment to the Yorkshire Health Study.

BOX 1 Examples of affective interactions with non-human matter (NHM) and places/spaces

Respondents affect NHM

So you know the little fobs that you open your electric gates with, I sell them. (Kate)

I cook vegetables on a Sunday. I buy loads of vegetables. There's loads of vegetables in fridge, but I'm always going to cook them and I never do. (Jane)

Even though we've got a table in there it's not very often that we all sit round it. (Gemma)

We love it [a caravan on a coastal location] because we do a lot of walking and my daughter really loves nature so on the beach, midnight walks looking for rabbits and foxes and all sorts so it's quite good for her. (Lorna)

Whenever we go out it's always making picnics up and stuff like that. We used to do a lot of walking, so we use a lot of the public rights of way round here. (Laura)

Respondents affected by NHM.

When I was first there [school] it [lesson plan] was a book and we just wrote literacy, making words, rhyming words, we just wrote down. Now it's to be a great long form... and then we have to copy and paste that onto little sheets that are stuck into the book. (Alex)

I play bingo as well, I'm obsessed with bingo, yeah I love it. I absolutely love it. Me and a friend have become quite obsessed. (Jane)

I have to have supplements now. I have to have them every day for rest of my life. Same with calcium, I have to take calcium for rest of my life. (Andrea)

We went on holiday to the [anonymised] Hotel in [anonymised] when we'd just got Thomas and we were so disgusted by mainly the food but the state of the hotel. I said to Chris I can't eat here. So we ended up having to go out. We've stayed in the hotel, we ended up having to go out and eat. (Alex)

Laura had worked part-time for [government department] for the past eight years, an hour's drive from her home. Her work was predominantly outdoors and entailed engaging with volunteers and communities to involve and enable groups such adults with learning difficulties or mental health issues, or disengaged teenagers with outdoor activities on its property. Laura's account was filled with references to NHM, many of which were associated with outdoor places and spaces. These comprised a significant part of both her working and domestic life.

We tend to, because we have a child we tend to use things like the local parks, the local lakes, the local woods, anywhere that's free or very low cost. Whenever we go out it's always making picnics up and stuff like that. We used to do a lot of walking, so we use a lot of the public rights of way round here. ... We're on the TPT [Trans-Pennine Trail] network so we can get on the bikes and we can just ride anywhere. So he [child] goes on the back of the bike and off we go with the dog. And then at the weekend we have to get out because if not the four walls drive you mad. It might be going to the woods, again feeding ducks, or like to local farm parks and things like that.

When not walking or cycling, she described other ways she found to be outdoors.

BOX 2 Examples of positive and negative capacities produced by interactions with non-human matter (NHM) or places/spaces

Positive (enabling) capacities

I've had problems with my back, I had a slipped disc.... I had my back operation two years ago in October and we've had the caravan three years. This last probably 18 months has been loads better and I can walk up hill and down dale and we do cliff top walks and on the beach. (Lorna)

I've always liked to cook, I always had to cook when I was younger.... When I went to choose my A levels when I was 16, the sixth form teacher said to me why don't you do home economics because you're good at cooking.... And I've always wanted to do that little bit more. (Billy)

We go up to Hatfield Moors a lot. Obviously with horses in summer and stuff, or I'll take kids down there and we'll just brush horses and field's big so horses get chucked in one half and kids play in the other half with a football. (Rebecca)

At the caravan we tend to relax and do things together. You know, we'll all go on the beach or we'll all go down to the park or what have you, and I think really that's why we've kept it on. (Alex)

Negative (constraining) capacities

Cost definitely comes into stuff. I mean unless it's on special offer I very rarely buy meat in supermarkets because I just think it's overpriced. (Billy)

When we moved to the new school we were told that we weren't going to be provided with laptops, whereas at the other school we already had a laptop so we could come home and work at home, and we were told that the new school would be opening all hours, so we could work there. (Alex)

We have horrendous power cuts because we haven't got a big, apparently electric supply down there, and because they're building more houses it's getting worse. (Andrea)

We shopped at [budget supermarket] for the price.... We bought their mince and we'd normally buy extra lean mince, and we had to ladle the fat off. But those are the choices you have to make.... But it's cheaper. (Leslie)

TABLE 1 Health status vs. positive/negative capacities.

	+ve capacities	-ve capacities
Good health ($N = 9$)	56	29
Poor health ($N = 9$)	29	41

We go to [country park] quite a lot and that's quite nice. So yeah, and we're out in the garden, well not in this weather obviously but as soon as it's warm enough out comes the sand and water table and we're in the garden playing and things like that. So even if it's just pottering around it's quite nice. ... It's so easy to be outside, it's so easy to keep yourself busy when you're out and about as well, so it's nice.

Laura and her husband had also become involved with the geocaching movement as a further outdoor hobby.

It's sounds pathetic but it's quite good. It's like a treasure hunt for adults basically. All over the UK, all over the world there are hundreds of thousands of like canisters and containers hidden everywhere you go. And some of them are really hard to find, and some of them are easy. So some of them are like little magnetic things hidden behind benches and stuff, others are like suspended canisters from trees and things like that. So it's all about getting out on walks but finding stuff on the way round.

This continuous interaction with outdoor space and the natural environment was fulfilling.

I couldn't settle outside the UK, I love the UK, I love it, absolutely love. I couldn't live anywhere else. I just love the fact that we've got yeah, such lovely countryside, the seasons make it for me, I think it's fantastic.

She and her husband had stretched their resources to buy a detached house in 'a nice village', as a way to improve their quality of life. Consequently, despite having dual incomes and working long hours, this had meant that money was tight, with around £110 per week after mortgage payment, bills and child care costs. This constrained their domestic activities.

We hide toys in the garden and find them, and replicate some of the story books. [What we can do is] completely limited by budget. Yeah, at a weekend if we don't have to use the car we won't use the car because it costs too much ... the less you put in the car the more you've got for yourself. We do our food shop at [discount supermarket], (a) because it's cheap and (b) because I can do the shop in 20 minutes with a child. If I went to [leading supermarket] it would cost me a third more,

It also had an impact on what she could buy, and for what her family could eat.

The only meat that we have is two packs of ham that do sandwiches, and we usually have one pack of bacon and probably a gammon joint because it's cheaper than a roast chicken, and that will last, but the rest of the meals are made up of Quorn, we used Quorn mince because it's cheaper and it goes further. We use a lot of like canned beans and things like that to make meals go further. We do veg curries and veg casseroles, there's no fast food, there's no pizza or anything like that because they cost too much. So yeah, basically you cut your cloth, I'd rather have fruit and vegetables than meat, you get more for your money.

As a consequence, Laura was contemplating taking on a second job as a child minder to bring in further income.

Case study 2: #13 'Andrea'

Previously employed as IT support for a large national company, Andrea had stopped work after her second child was born, and was now undertaking voluntary work. Married to a car mechanic, with two children, she was in poor health, with a very low Eq5 score of 0.088, 33 days sick in the three month audit period, and chronic conditions (depression, anxiety, pain). She had lost substantial weight after a recent gastric bypass, having previously been morbidly obese. She described how physical

environment and location had been significant determinants in her life. As a child, she had grown up in a semi-rural village nearby, and the natural environment was a strong memory.

It was quiet yeah, we spent a lot of time in fields and when it were harvest time we used to love harvest, because they used to put all hay bales in fields and things. So we were always out and about, and because there were, it wasn't Trans Pennine Trail then; it was just fields and a track. And we used to be always out on our bikes and up and down and in fields and having picnics and things like that. We used to get on our bikes with a picnic and go out for the day. So we were always out and about in fields and things. These used to be, there used to be little dens in trees and things, because then all trees come right to edge of road, but council's cut them back.

After marrying, she had moved away from the area, but had been keen to return. Her local knowledge enabled her to pinpoint a specific street where she wished to live, which backed onto fields.

I always said when we had kids that I'd want to move back down here because it seems, even though we're in [village] it's a bit out of the way, you have to go over the bridge and we're a bit out of the way of everything. ... You can see there's a gate at bottom, that's end of our street and then it goes onto lane which is Trans Pennine Trail and it comes out at bottom end of [town]. And I don't have any worries with kids playing on street or anything like that.

Within two years, they had secured a terraced house in her desired location.

We wanted a house further down, but we lost out on that, so we kind of went for this one. When it come up I said I don't care if it's a shed, I want to live on this street. People are walking up and down yeah, but it's nice because when kids get fed up like in school holidays or anything and it's like come on let's go for a walk. And [daughter] likes it because they have all horses in fields and things.

For Andrea, the other major area of NHM interaction was with foodstuffs, which had led to a very high BMI. She had experienced significant health issues and limits to her daily activity.

I had lots of trouble with my knees and they said that I'd have to have surgery on my knees if I didn't lose weight. When I came downstairs I used to have to lean on wall to walk down stairs, because my knees hurt and because of my weight I was always falling over, even kids kept saying it, you're always falling over mum. And I think it was just weight. ... Well they couldn't operate until I'd lost weight.

After years of unsuccessful diets and efforts at exercise, a gastric bypass operation had significantly altered her interactions with foodstuffs.

Since I've had my bypass obviously I can't eat a lot of foods that everyone else does. I still have same foods, but really tiny portion. ... I couldn't eat big meals I'd just like have a little bit of potato or bit of vegetables and because I was really sick if I had certain vegetables I was sick more or less straight away,

However, it had also opened up new physical capacities.

I remember first time I ran upstairs I'd done it and then not realised, and I was like ooh I've just ran upstairs! ... Not long after I had operation I came off blood pressure and I came off antidepressants, so I hadn't been on them for I think it was two months after my operation they took me off them and I've not needed them since. ... Because I've lost so much [weight] I've gained more, because then I do a lot more with kids now. Because I was like last night we were looking about things to do in holidays, because we were away for two weeks, but rest of time it's like ooh shall we go here and oh look shall we go there and shall we do this?

Case study 3: #25 'Katherine'

Katherine was 40 years old at the time of the interview, married with two children. She worked as a senior manager for an engineering firm and reported working long hours. She was in good health, with an Eq5 of 1, no chronic conditions and no days sick taken in a three month audit period. With two full-time salaries coming in, Katherine lived in a detached house with a high disposable income, which enabled a comfortable lifestyle enabling the purchase of 'nice things'.

We do have a good lifestyle, yeah, a really, really good. And I'd say it's probably balanced as well, quite well balanced. I love holidays, love food, love going out, having fun, that's me, happy go lucky really.

Travel to holiday destinations was an important element in her lifestyle.

So far this year, we've done big holidays, we've done Italy and cruising round the Med, we did that. We did, what else have we done? Devon, we've just done Devon. We're doing Spain again in October. I usually plan like one holiday, and then the rest are just like, I just wing it. What else have we done? We've had like loads of weekends away. We've done Scarborough and stuff like that. ... But yeah, holidays, we're always away. If I can get away, we'll go.

Food was also a significant area of interaction with NHM, which amounted to more than simply consumption.

Food is a hobby, but we like to go to Michelin-starred restaurants. So we like the sorts of, and some of our friends do as well. ... We booked our holidays around Michelin-starred restaurants that we want to try. Jamie, when he were 40, we did one every month for 12 months. ... It's a hobby! And we class it as a hobby, because we like nice food. And it's not just about the food it's the theatre as well that you get with it. So if you go in and have like a tasting menu it's the theatre that comes with that. ... But the same is when were away on holiday, when we go away, we look for nice restaurants, nice traditional restaurants. Going out for something to eat is part of our night out.

Her income had allowed her to indulge this pleasure, which also extended to fine wines.

I would never ever think about the price of food, because it's essential you've got to have it. ... I get that some people have to, it's a necessity that they have to, and that's fine and I don't frown upon it; it's just while I can I like nice things. ... I don't think naught to paying eleven, twelve pounds for a decent bottle of wine, whereas I've got friends that it's three for a tenner. Which is fine, you can sup it, you know what I mean, it don't matter, but if I've got a choice I'd rather have one nice bottle of wine than three rubbishy ones.

The only area of dissatisfaction expressed was having insufficient funds to undertake a major re-design of her house.

Case study 4: #22 'Cath'

Married with two children, Cath was 51 years old, non-employed and in poor health, with an Eq5 of 0.31. She suffered from chronic depression, diabetes and high blood pressure and had had recurrent mental health crises. She considered that her mental health issues stemmed from stressful situations, in which NHM had often played a part. She described how her initial breakdown occurred when attempting to ensure the playgroup where she worked was compliant with new government regulations.

I made plans, I drew charts up and, you know, to say how many children we needed to make it viable to pay people and that. And it just got on top of me and I just lost it, weren't right good experience that. If I were at home and I'd think of something I'd write it down, you know, or I'd make a, I sat for ages cutting shapes out of cereal boxes, you know, to trace, like a watering can or a wheelbarrow so they could just paint it. I did it sort of ready to take it in to group and to link it to other things that we were playing with.

On another occasion, she was working part-time delivering a local free-sheet newspaper.

I asked to just do a round but because of my background they offered me an agent round, which covers a lot of people. I were in charge of one area and then I delegated to deliver the [freesheet] to others. But one day they sent me, oh thousands of leaflets. Each [freesheet] I thought, four and a half thousand houses I dealt with, and they gave me the [freesheet] with leaflets inside, and each one nearly had ten leaflets, and the garage were full of leaflets and that and we couldn't get the car in. Well, [husband] were furious, he were, he weren't right happy about that, and I weren't because there were that many brochures to put into the [freesheet] I were there forever.

Both Cath's poor health and a lack of spare money had impacted on their capacities to do things outside the house.

Probably garden if it's not too busy. ... We don't go to pub much. We'd rather have a drink in the house rather than go to the pub. I did read, but I don't do reading as much now. I can't concentrate on it, so I listen to the radio on headphones. Download, my daughter downloads me music on mp3 player. I like watching [football] but [husband] can get a bit heated so. It's worse than being at football matches sometimes, he really shouts at screen sometimes, and when he's like that it puts me off the match.

We haven't had money to go for a meal for ages. We've had to live week to week on his wages. If this job is alright we might go out before Christmas for a meal just to the pub, you know, for a once in a while treat.

Her health problems had also affected her diet and efforts to lose weight.

Not very good at the moment. I'm trying to keep an eye on it, trying to lose weight but I think since I've been diagnosed with diabetes, it's harder to lose weight. So I'm finding it difficult. I keep an eye on it but it's hard. Trying to stick to things, you know like, getting your five a day. I find that difficult. I can buy fresh fruit in but I can't have a lot because of my teeth. I can't bite an apple type of thing, anything too hard. I have to let it go soft. I can't bite into a sandwich properly so I have to watch what I put on that.

At the time of the interview, Cath expected to have to begin using insulin to control her blood sugar levels.

DISCUSSION: A THOUSAND TINY DIS/ADVANTAGES

These findings suggest a very different perspective on both the production of social position and its interaction with health and wellbeing from that offered in other contemporary approaches. In this concluding section, we wish to address three issues: the need for studies of health disparities to acknowledge interactions with NHM; how a new materialist approach shifts understanding of social position; and how social dis/advantage and health interact and overlap.

First, we have focused on the part that NHM and material spaces and places play in people's lives. Accounts were replete with references to such interactions, both in which respondents affected NHM and in which it affected them (see Box 1). The emphasis in these interviews was principally on family life and complements a second recent study on NHM in the workplace (Fox and Gavrilyuk: forthcoming) that reveals a similarly myriad range of interactions (e.g. with tools, technology, workplace infrastructure). While not dismissing the significance of human/human interactions, both these studies suggest that explorations of how bodies assemble with non-human material elements (for instance, Laura's engagements with food ingredients or Andrea's affective interactions with specific features of her immediate neighbourhood) have been under-explored in studies of social position.

This concern with the affectivity of NHM moves analysis beyond merely acknowledging the part it plays in creating the conditions of daily life. The case studies reveal how interactions with NHM are implicated directly in the production of material capacities or incapacities. Laura described engagements with outdoor spaces and their contents, as well as good quality housing as the most significant positive aspects of her daily life, even though the latter placed a strain on family finance. Katherine was able to enjoy a good lifestyle by taking holidays, eating out and generally enjoying a materially comfortable lifestyle. Meanwhile Cath spoke of the power of NHM to impede or constrain many aspects of her daily life (cf. Bennett, 2005).

Second, this recognition of how capacities and incapacities emerge from the myriad daily interactions that people have with NHM (and with other humans) suggests a different perspective on social advantage and disadvantage from both neo-Marxist and neo-Bourdieuian approaches. Throughout the paper, we have chosen to speak of social position and sociomaterial dis/advantage rather than 'class' or occupational categories. We are fully aware that 'class' has sometimes been used sociologically to advance a secondary objective: to sustain a critical perspective on the social ills of capitalist

production, and how these may directly or indirectly impact negatively upon health (for instance, by encouraging a market economy that leads to widening income disparities, both within countries and between global North and South (Scambler, 2012: 143; Standing, 2014), or the privatisation of health care that disadvantages the poorest in society (Burke & Pentony, 2011; Rotarou & Sakellariou, 2017)). We support this critical objective, but suggest that the concept of 'class' is a sociological simplification inadequate in itself to explain *how* the economic and social relations (affects) of capitalism and local, national and international government policies translate into disparities in health/wellbeing, and itself requiring further explanation (Latour, 2005: 130–131).

The type of analysis of the everyday, commonplace material production of dis/advantage that we have conducted here has sought to explicate these affects, by focusing on the multiplicity of daily interactions that produce sociomaterial dis/advantage from moment to moment. Our analysis reintroduces and re-invigorates criticality through its focus on how everyday and often commonplace interactions (including with NHM) produce capacities and incapacities in human bodies, and thereby the 'thousand tiny dis/advantages' that may in turn produce ill/health. It does not deny the dynamics of power and resistance that course through the social world, but seeks to unravel these at the level of the myriad operations of affect they constitute within the assemblages of daily life (Fox & Alldred, 2018). These assemblages may include 'macro' level affects deriving from market economics, government policies or industrial strategies, but these affect bodies materially in just the same way as any other affect. The forces identified by sociology that aggregate, constrain and allocate resources differentially (conventionally identified by titles such as 'neoliberalism' or 'patriarchy') endure, but from a new materialist perspective manifest and affect bodies at the level of the everyday events that constitute human lives and human history (DeLanda, 2016: 14–18).

If anything, this analysis strengthens understanding of the multiple ways in which dis/advantages are produced and reproduced on a daily basis by the social relations of capitalist production and markets. It also recognises the intersectionality of dis/advantage, encompassing multiple axes of sociomaterial and affective empowerment and disempowerment associated with gender, race, geography and so forth, without reinforcing or reifying these as structural sources of power (Dolhijn & van der Tuin, 2013: 140). The need to counter the differential production of dis/advantage politically and through public health and social policy initiatives, locally and nationally, remains.

Acknowledgement of the part NHM plays in producing dis/advantage suggests that in addition to a redistribution of wealth and assured economic and job security at all stages of life, these initiatives need to acknowledge and address the affectivity of NHM. Measures such as improvements to the built environment (private, communal and public); the frequency, convenience, quality and affordability of public transport; access to green spaces and other leisure facilities; adequate funding of health, social care and community services; an end to fuel poverty; improvements to infrastructure (including utilities, broadband); and measures to assure personal safety at work, at home and in public places are not simply technological fixes: they address the ways in which the non-human environment directly impacts on what human bodies can do, how NHM mediates dis/advantage, and what opportunities and constraints NHM produces in bodies.

Finally, turning to the relationship between health/wellbeing and these capacities, we found a highly statistically significant ($p < 0.01$) divergence between good and poor health respondents in terms of the balance of positive and negative capacities reported (Table 1). For those in the 'poor health' category, many capacities were directly associated with health or wellbeing, as was seen in the case studies reported. Cath's life had closed down substantially as a result of her mental health issues, diabetes and other problems, limiting what she could do both domestically and in employed work. Similarly, Andrea's daily life had been constrained by weight problems and multiple physical and mental health issues. After other clinical interventions to help her lose weight failed, the drastic solution of a gastric bypass had enabled weight-loss and greater mobility, but had imposed new limits

on what she could eat without negative side effects. In these case studies, it was the material rather than symbolic capacities of these non-human relations that contributed to these respondents' dis/advantage and ill/health.

Much work on the sociology of health disparities has sought to establish causal relations between social position and health. The analysis conducted here suggests that we should no longer attempt to assess the extent to which sociomaterial dis/advantage 'causes' health disparities (Townsend and Davidson, 1982: 113–114) or alternatively, how health status 'causes' sociomaterial dis/advantage (West, 1991). Rather, we need to understand dis/advantage and health/wellbeing as intimately and inextricably linked. This perspective is unlocked through our application of the concept of 'affect', defined earlier as 'a capacity to affect or be affected'. As the data reveals, the opportunities or constraints afforded by a body's (non-health) capacities may produce good or poor health, while health status may also affect a body's other capacities. In other words, health may be both an outcome and a condition of possibility; this same dual character also applies to sociomaterial dis/advantage. In effect, 'health' and 'dis/advantage' are part of the same phenomenon: the quotidian and unending production of positive and negative capacities as bodies interact with both human and NHM.

We would suggest that this analysis builds upon, but also draws together and refines, previous scholarship that has addressed the impact upon dis/advantage and wellbeing of material factors including economic resources, housing and the built environment; working conditions, and spaces and places. What the present study has added is the insight that NHM is neither a passive contextual backcloth to human agency, nor merely the carrier of symbolic meaning. With ontological privilege withdrawn from human agency, it allows us to acknowledge that NHM possesses capacities to directly and materially affect what a human body can do (Bennett, 2005, 2010: 5). These in/capacities in turn produce dis/advantages, including 'health' dis/advantages. Our findings run counter to propositions that 'social status' is the intervening variable between income inequality and health. Where we might have found evidence for places, spaces or material goods as markers of social distinction or status, we found instead that it was the material capacities of NHM that affected respondents. We must conclude that the role of symbolic capitals in producing health disparities remains at best unproven. By contrast, we would assert that NHM is of considerable significance in the production of bodily capacities, of 'a thousand tiny dis/advantages', and of the closely associated phenomenon of health. As more research on the daily production and reproduction of health disparities accrues, this will supply evidence for public health interventions, social policy formulation and activism, to counter disadvantage and its effects on wellbeing.

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AUTHOR CONTRIBUTION

Nick J Fox: Conceptualization (lead); Data curation (equal); Formal analysis (equal); Methodology (lead); Project administration (equal); Software (equal); Writing-original draft (lead); Writing-review & editing (equal). **Katie Powell:** Data curation (equal); Formal analysis (equal); Project administration (equal); Software (equal); Writing - review & editing (equal).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

¹ For reviews and critiques of new materialist approaches, see Coole and Frost, 2010; Devellennes and Dillet, 2018; Fox and Alldred, 2017; Rosiek et al., 2020.)

² This formulation references new materialist scholarship that has replaced discrete 'gender' and 'race' categories with 'a thousand tiny sexes' (Grosz, 1993), 'tiny races' (Saldanha, 2006) and indeed 'tiny intersections' between these multiplicities (Dolphijn and van der Tuin, 2013).

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