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Short Report

On how much one can take: relocating exploitation and exclusion within the broader framework of allostatic load theory

Dragos Simandan

Geography Department, Brock University, 500 Glenridge Avenue, St. Catharines, Ontario, Canada L2S 3A1

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The aim of this short report is to share with the readers of *Health & Place* the far-reaching opportunities open to medical geographical scholarship by *the integrated model* of allostasis, a major advance in psychological science that has just been published in *Psychological Review* (Ganzel et al., 2010), the discipline's most prestigious journal. To be sure, the aforementioned paper is just the latest, most comprehensive *original* synthesis of a research effort launched in the first decades[1] of the 20th century by Walter Cannon and Hans Selye and sustained ever since in a broad range of academic disciplines (cf. McEwen, 1998; Peek et al., 2010[2]). I focus on this paper alone because it provides a state-of-the-art conceptual integration of the findings across *all* the areas of stress research, and especially because it brings together the latest developments in the rapidly expanding fields of human neuroscience and genetics with key concepts from stress models from the medical sciences and the social sciences. Furthermore, as already suggested by the title of this report, Ganzel et al.'s integrated model of allostasis provides us with a unified conceptual apparatus for analysing phenomena of medical geographical interest such as exploitation and exclusion that at present tend to be investigated in a somewhat disconnected manner, from theoretical standpoints (Marxism, poststructuralism) that are often at odds with each other.

I begin by outlining the gist of this novel account, and then, building on this minimalist platform, continue with a forward-looking exploration of the impact and significance this new theoretical lens could and should have for the future trajectory of medical and health geography.

Allostatic load theory is concerned with the lowest scale[3] of medical geographical analysis, the human body, and aims to explain the precise physiological mechanisms that lead from the various stressors experienced over the life course to ill health. The human body achieves systemwide stability in spite of fluctuations in its surroundings by an ongoing brain-coordinated process of generalized physiological adjustment called allostasis. Adaptation to a current stressor is referred to as allostatic accommodation, whereas the cumulative wear and tear accruing from the repeated use of the body's allostatic mechanisms over the lifespan is called allostatic load. As allostatic load accumulates, the body's capacity for effective allostatic accommodation decreases, leading to a downward spiral of increased vulnerability to new stressors, and ultimately to impaired mental and physical health. To be sure, while all environmental challenges to the body can parsimoniously be described as stressors, because they tend to have the same kind of effects on the body's resilience and on physical and mental health, it remains profitable, for analytical purposes, to be

E-mail address: simandan@brocku.ca

[1] Cannon's and Selye's pioneering work and the subsequent course of stress research are reviewed in some detail in the section "Common Origins" in Ganzel et al., 2010, pp. 136–139.

[2] As one referee noted, Peek's research team includes Malcolm Cutchin, a health geographer by training.

[3] Throughout this paper, "scale" is used as shorthand for "level of analysis".

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attuned to four dimensions along which stressors vary. These are intensity (e.g. mild stress *versus* trauma), chronicity (e.g. a rape *versus* lifelong economic exploitation or discrimination and social exclusion based on sexual orientation or skin colour), the social/natural dimension (e.g. physical stress, such as infections or injuries *versus* social stress, such as making ends meet through contingent employment or bearing the contempt of one's bigoted community), and developmental timing (e.g. childhood stress *versus* advanced age stress). To elaborate on the latter, the timing of environmental stressors matters because the presence of a stressful surrounding in childhood, when allostatic mechanisms are not yet fully developed, results in a uniquely debilitating carry-over of past environmental insults across time, into adulthood, by means of an excessively elevated allostatic load. In addition, and quite intriguingly, several independent lines of converging evidence make it plausible, though not yet fully established, that there may even be epigenetic mechanisms of inter-generational transmission of allostatic load, whereby the reaction to stress of children from low social class, for example, bears the brunt not only of the excessive wear and tear induced by their own harmful childhood circumstances, but also that of *their parents' childhood*! This observation ushers in one obvious point of contact between health geography and the new theory, namely the latter's agreement that the ability to withstand environmental challenges depends not only on allostatic load and inter-individual genetic variance in vulnerability to stress, but also on the amount, type, and quality of the material and social resources available at a given moment to a household or individual (Smith and Easterlow, 2005). A further point of contact emerges from the shared dialectical perspective that subtends allostatic load theory and at least the Marxist quarters of health geography (Mayer, 1996). To give just one example, there is a hormetic, inverted U shaped (and therefore dialectical), relationship between the intensity of experienced stressors and the level of long-term adaptation achieved by the body. That is, up to a point, small amounts of stress are beneficial because they train the body to effectively use its allostatic machinery; beyond that tipping point, however, quantitative changes lead to a qualitative leap whereby intense stressors exceed the body's ability to adapt, and thus begin to have detrimental consequences for long-term adaptive prowess. Last, but certainly not least, given health geography's commitment to improve population-level well-being (Moon, 2009), the new theory calls attention to the more-than-scientific fact that the parts of the body most affected by allostatic load are the brain areas responsible for emotions. Put simply, a long history of relentless environmental stress directly damages precisely those neural networks most involved in the generation of feelings of well-being and happiness.

Why should we, health geographers, care about this novel theoretical lens? To begin with, the new account can easily be accommodated into our existing theoretical arsenal, because, as the perceptive readers must have already noted by now, the account is a decidedly historical materialist[4] one, just like good old Marxist theory. Indeed, understanding the present health hazards and disease patterns of an individual or community hinges on uncovering both the distant and the recent history of their material conditions. Past geographies that unfolded at the larger scales of the household (e.g. child abuse), neighbourhood (e.g. homophobia), city (e.g. unemployment), or nation (e.g. the Great Depression in the US) are preserved and carried over into present geographies by means of the lowest scale of medical geographical interest, the body. One sees resurfacing here in a new incarnation the Leibnizian idea of the monad, that is, of the fact that the broader world is encrypted into, and retrievable from, each of its elementary constituents. In our case, this directly translates into a strong rationale for a renewed interest in the body-in-context as a fundamental unit of medical geographical analysis (Parr, 2002; Lindsay, 2004). The broader environments we live through, and leave behind, shape our bodies, and therefore bodies constitute incredibly rich research sites where one can detect the legacy of exploitation and exclusion they had, at some past time, withstood. By reading once again the previous sentence, we can glimpse a further significant promise of allostatic load theory, namely that it has the power to foster better coordination, dialogue, and cross-fertilization between two somewhat disconnected sets of narratives within critical health geography: the Marxist economy-oriented narratives of exploitation and material inequality (Mayer, 1996; Whiteis, 1998) and the poststructuralist culture-oriented narratives of exclusion and symbolic inequality (Dyck, 2003; Segrott and Doel, 2004). This is so, because the new theory recasts the two approaches as mere variations on the more fundamental theme of how our bodies cope with, and sometimes succumb under, the cumulative weight of environmental challenges. By relocating and integrating the two critical approaches into a wider theoretical scheme,[5] and by mechanistically tracing the subtle and far-reaching bodily consequences of the processes of exploitation and exclusion, allostatic load theory refines our understanding of them, while at the very same time opening up prospects for new research questions and interdisciplinary exchanges with fields as diverse as social medicine, medical psychology, affective neuroscience, child and youth studies, and medical sociology. As a result, we would, in all likelihood, witness a praiseworthy shift from the sometimes implicit, vague, and ambiguous portrayal of the effects of exploitation and exclusion (''people suffer'') to an explicit, precise, and unambiguous depiction of the exact physiological mechanisms by which exploitation and exclusion damage the health of the affected individuals (e.g. capitalism/homophobia → exploitation/exclusion as chronic stressors → allostatic load → neural damage → impaired allostatic accommodation → downward spiral of poor mental and physical health).

Furthermore, because of its outstanding ability to unify widely different levels of analysis, the new account enables health geographers to attack from an unusual angle the long-standing problem of coordinating explanation across scalar levels (cf. Moon et al., 2005). We can now contribute explanatory threads that meaningfully articulate the global investigation of the hydra of capitalism, with the local foray into the actual conditions of living in disadvantaged households and neighbourhoods, and with the neuroscientific scrutiny of the specific brain changes that accrue from people's desperate attempts at coping with these higher-level processes of exploitation and exclusion. By unifying explanation across scales, health geographers would achieve a highly desirable epistemic virtue, namely explanatory depth.

Since epistemologists universally agree that deeper explanations have more merit (Lipton, 2004), and since lay people also find them more satisfying and credible, the integrative reworking catalysed by allostatic load theory would likely raise both the academic profile and the public impact of medical and health geography.

[4] Importantly, and as evidenced by their citation of (Krieger, 2001), Ganzel et al.'s (2010) model claims to incorporate the gist of Nancy Krieger's eco-social theory, a materialist approach with which geographers of health have been much more familiar.

[5] I am not arguing that allostatic theory should *replace* Marxism and poststructuralism; instead, I think of it as a third, superimposed, language that enhances communication between these two camps by providing an alternative, deeper, description of what the two camps are actually doing.

References

Dyck, I., 2003. Feminism and Health Geography: twin tracks or divergent agendas? Gender Place and Culture—A Journal of Feminist Geography 10 (4), 361–368.

Ganzel, B., Morris, P., Wethington, E., 2010. Allostasis and the human brain: integrating models of stress from the social and life sciences. Psychological Review 117 (1), 134–174.

Krieger, N., 2001. Theories for social epidemiology in the 21st century: an ecosocial perspective. International Journal of Epidemiology 30, 668–677.

Lindsay, S., 2004. The influence of the 'spaces of everyday life' on pregnancy health. The Canadian Geographer 48 (1), 35–51.

Lipton, P., 2004. Inference to the best explanation 2nd ed. Routledge, London.

Mayer, J., 1996. The political ecology of disease as a new focus for medical geography. Progress in Human Geography 20, 441–456.

McEwen, B., 1998. Protective and damaging effects of stress mediators. New England Journal of Medicine 338, 171–179.

Moon, G., 2009. Health geography. In: Kitchin, R., Thrift, N. (Eds.), International Encyclopedia of Human Geography. Elsevier, Oxford, pp. 35–45.

Moon, G., Subramanian, S., Jones, K., Duncan, C., Twigg, L., 2005. Area-based studies and the evaluation of multilevel influences on health outcomes. In: Bowling, A., Ebrahim, S. (Eds.), Handbook of Health Research Methods: Investigation, Measurement and Analysis. Open University Press, Berkshire, UK, pp. 266–292.

Parr, H., 2002. Medical geography: diagnosing the body in medical and health geography, 1999–2000. Progress in Human Geography 26, 240–251.

Peek, M., Cutchin, M., Salinas, J., Sheffield, K., Eschbach, K., Stowe, R., Goodwin, J., 2010. Allostatic load among non-Hispanic Whites, non-Hispanic Blacks, and people of Mexican origin: effects of ethnicity, nativity, and acculturation. American Journal of Public Health 100 (5), 940–946.

Segrott, J., Doel, M., 2004. Disturbing geography: obsessive-compulsive disorder as spatial practice. Social & Cultural Geography 5 (4), 597–614.

Smith, S., Easterlow, D., 2005. The strange geography of health inequalities. Transactions of the Institute of British Geographers 30 (2), 173–190.

Whiteis, D., 1998. Thirdworld medicine in first world cities: capital accumulation, uneven development, and public health. Social Science and Medicine 47, 795–808.