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Guest Editorial

What is the point of public health in the 21st century?

It was hardly accidental that public health as a battleground for society emerged with industrialisation. The rapid growth of towns, pollution, squalor, work dangers, intensified inequality, and more, threatened the public health. No wonder public health proponents are so celebrated historically. They literally cleaned up the new urban capitalism. In the space of 50 years, cities like London, Paris or Berlin were transformed and civilised – literally made habitable.

But what is the rationale for public health today? That is the question which unites this special collection of papers, drawn from across the world. Some are written from developing countries (Mou, Griffiths et al.), others from the developed (Lang & Rayner) and others the planetary (Butler, McMichael et al.); some consider de-industrialising locations (Hanlon and Middleton & Saunders), others how to inject ecological public health into existing organisations (Pencheon); some consider the theoretical challenge (Reis, Morris et al.), others the front-line in human health care (Wallinga et al.).

Some might – indeed some do[1] – argue that the pursuit of public health only has a real purpose in the developing world today, in places which today exhibit the kind of conditions the West experienced from the late 18th century. We disagree with this, although the needs of the developing nations for public health infrastructure are dire and urgent, as one article in this collection makes clear. But the core question raised in this collection is about the purpose, tasks and soul of public health in the 21st century. In our view, this is still weak at the global and political level yet, as this issue reinforces, there is evidence of enormous tasks ahead, some of which exceed even the imagination of the public health movements of the past. Scientists map awesome environmental, health, economic and societal threats, all of which demand mass engagement, courageous campaigning and extensive experimentation if they are to be overcome.

Where does public health fit into this wider agenda? The rationale for public health can usefully be distilled to at least four arguments which diverge in their implications. Each of these has deep historic roots, and each is and should be voiced today.

Four arguments *for* public health

The first and perhaps most intellectually taut and politically effective argument is and was Utilitarianism. Jeremy Bentham's argument – followed by his many disciples – that investment in public policy, by implication public health, was to secure the 'greatest happiness for the greatest number'. Social evolution, in this formula, favours cultures that internalise utilitarian maxims intuitively and systemically. According to John Stuart Mill, who named this philosophical system, this was essentially an argument about progress.[2] This was the philosophy behind much 19th century public health legislation, certainly the pioneering English 1848 Public Health Act.

The second argument for public health is a moral appeal. Health should be promoted for its own sake, to advance the development of each and all. Public health is about a decent society, achieved through education in rights and responsibilities. As Immanuel Kant put it, '[a]ny action is right if it can coexist with everyone's freedom in accordance with a universal law, or if on its maxim the freedom of choice of each can coexist with everyone's freedom in accordance with a universal law.'[3]

The third argument is statist, partly manipulative, partly self-preservation. To invest in public health suits the powerful. It prevents the breakdown of social order. It prevents the inefficiencies and dislocations of disease. It even hides (or dampens down) distress, poverty and inequality. The promotion of public health emerges when the interests of the élite coincides with that of the masses. This is the analysis made by Friedrich Engels in the preface to the first English edition (1892) of his book on life in Manchester, England, written decades earlier (in 1844).[4] He observed how 'the repeated visitations of cholera, typhus, small-pox, and other epidemics have shown the British bourgeois the urgent necessity of sanitation in his towns and cities, if he wishes to save himself and family from falling victims to such diseases'. It is a message of self-preservation which can be expanded by economic circumstances into a case for democracy[5]; one which so many ruling groups in the world continue to disregard.

The fourth, like the others, is old but today may best be cited with its modern title – sustainability. To protect the health of the public requires long-term thinking. Immediate, short-term advances can come from expensive but relatively quick processes such as sanitary engineering or antibiotics or cheaper food (from innovations like chemical fertilisers), but these can and do become compromised by unintended

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consequences. In the long-term, ecological imbalances create limits to 'liveability' and have to be addressed. This was Thomas Malthus' argument, first aired at the dawn of the 19th century, but it was also captured by Victorian thinkers as distant in outlook as Edwin Chadwick, a utilitarian and author of the first UK Public Health Act, and Victor Hugo, the author of *Les Misérables*[6] – which continues to play in theatres across the planet - both of whom argued for a sustainable balance between town and countryside, for example by returning human effluent to the soil. Now in the era of climate change it is, or should be, everyone's argument.

These four rationales do not exhaust the case for public health, which must also be rooted in the capacity of humans to fully express themselves in aesthetic, cultural or social terms. In truth, the role of public health is also that of a social movement; one which maintains and expresses the conditions in which humans live, work and play in a health-enhancing, ecologically and socially viable state – including the addressing of what are now expanding inequities – which is itself an urgent driver for the reinvigoration of public health action.

How much evidence does the world, let alone the public health movement, need before politicians have sufficient public support to act firmly to prevent runaway climate change? Or water stress? Or land degradation? Or antimicrobial resistance? Or unhealthy working conditions? Or widening, indeed scarcely credible, inequalities? Or unsustainable urban-rural dislocation? Or the consequences of mass migration? The list of large-scale pressures on public health can be both long and daunting. That itself is part of 21st century public health's challenge: the problem of scale. The sheer scale of problems encourages a reflex retreat to the small and the particular. This is understandable but wholly wrong. On what perspectives can we draw to face the challenges ahead?

… and the five traditions of public health

If the rationale for public health can be encapsulated into the four arguments given above (and readers may add their own), the response by public health proponents can be distilled into at least five major traditions. We have given long accounts of these elsewhere.[7] Here we present them in more succinct formulae.

The **Sanitary-Environmental** approach applied engineering and regulation to protect health. Classically, from the Romans on, this meant cleaning up streets, water, food and human waste. As one historian has noted, the case for sanitation and hygiene, first set out in Paris but later eclipsed by the hunt for microbes, has come full circle with the Pasteur Institute's call for the reassertion of hygiene.[8] It's a formula: engineering + regulation = health.

By contrast, the approach we term **Techno-Economic** sees the improvement of the public's health as a function of economic advance laced with technological change. This is expressed, for example, in improving nutrition, the overcoming of scarcity being driven by the agricultural sciences. Associated with Thomas McKeown,[9,10] or since him by the Nobel-winning economist, Robert Fogel,[11] this too may be starkly reduced to a formula: economic growth + technology = health.

The **Bio-Medical** approach is what many see as the classical approach to public health. In fact, it is one among several. Only recently, since the late 19th century, can it claim any degree of effectiveness. This formula is stark: medicine = health. And it was this suggestion that public health advance could be reduced to biomedical progress with which McKeown took issue. Today, it is being given a new twist in the form of 'personalised medicine', the acme of choice culture.

The **Social-Behavioural** approach centres on changing beliefs, knowledge and behaviour. It begets another reductive formula: education + changed behavioural norms = health. If this seems a new approach designed for an age when behavioural factors matter more, it actually isn't. Behavioural rules, for example, over what to eat and drink and how are age-old. What differs today perhaps, is that this approach has become mixed up with the marketplace methods for manipulating behaviour, rather than, as Kant would have it, educating people to reject 'the ball and chain' of accepted dogmas.[12] This is health as negotiated 'rules of behaviour'.

These four approaches we see as the conventional public health approaches, in the sense that they solely address the health of populations and not, as with the fifth approach, the interdependency of public health on eco-systems. **Ecological Public Health** sees public health as the outcome of complex interactions over time. It (re)locates human health within ecosystems health and it recognises humankind's pressures upon nature. Humans exist within biological, social and cultural worlds – each with their own dynamics and crossovers. In the 21st century, this argument is returning with some urgency. Evidence mounts that human health depends on wider biological and environmental health. This reignites 19th century arguments about the importance of sustainability. In the 1960s, this ecological public health thinking proposed that growth of the human species and consumer demand was compromising the ecological base of life.[13,14] Progress in the material aspects of life may be desirable, yes, but in what form? And can a consumerist logic of unsustainable material aspirations be deemed progress if it is to the detriment of the planet? In this approach, the formula is more complex: the reshaping of conditions (material, biological, cultural and social) = health.

Why ecological public health?

The four conventional models of public health have enormous value, but have limitations too. They vary in how much traction they attract in policy and financial support. They vary, too, in visibility and public understanding. Their case is not helped by having competing rather than united champions, but perhaps that is inevitable. They are subject, to varying degree, to political whim. No one model can resolve the pressing issues facing 21st century public health. It is this incompleteness which is winning renewed attention to the ecological public health approach. That and the reality of planetary pressures from climate change to material resources, population density to biodiversity. This is the sole

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approach which both gives central focus to the interconnection of eco-systems and human health, and integrates insights from the other models.

A major advantage in ecological public health is its emphasis on the long-term perspective. It encourages public health to be framed in global as well as local terms, and to engage with the shape of modern capitalism whether in democratic and welfarist or undemocratic and repressive forms. Either way the demand for health is critical because it expands the case for living democracy and the acknowledgement of collective, as opposed to private, need. It recognises too that even democracies can be flawed; those committed to neo-liberalism in policy often have limited economic democracy in practice. To some extent, the marginalisation of public health has accompanied the rise of the neo-liberal agenda in formally democratic societies: the belief that society-wide processes and benefits can be reduced to individualised relationships between consumers and business and that everything is reduced to the workings of a market.[15] Yet all life, and certainly health, cannot be reduced to the flow of goods through a pipe, anonymous transactions (often concealing lines of power) and whether and where profits are extracted and by whom. The ecological perspective re-emphasises relationship as circular, in feedback loops, woven into a complex web of interactions. Ecological public health implies the need for ecological economics.

This was an argument given ethical and analytic power by John Stuart Mill in the early establishment of modern economic thought. Here was someone, aghast at the destruction of the natural landscape by industrialised farming and urbanisation, who argued that nature must take priority over the demands of economic growth.[16] Some economists now edge into this territory with the notion of 'circular economies'.[17] This is a start but critics point out that this still sees the world through the lens of products, goods and services, market-stimulated demands rather than human needs always limited by the Earth's capacities.[18–20]

Alternatively we can see public health as a function of how humans live within the eco-sphere, reflected into their patterns of health and wellness (or absence thereof). Good public health outcomes are the result of the accrual of many different factors, but now, in the 21st Century, the Public Health movement has to respond to major league crises. If we remain fixated on the small scale, the Nudge, or the achievement the minor behaviour change, we too will become increasingly marginal. And deservedly so.

This special issue on ecological public health is neither the first thing to be written in this vein, nor must it be the last. The relationship between human health and other levels of existence is nothing new. Almost all ancient cultures knew their dependence on nature, the earth, water, climate, resources, all of what today are collectively termed 'eco-systems' or ecosystem services. Not all accepted these limits. As a consequence some collapsed.[21] On all continents, through a variety of lenses – religious, quasi-scientific, poetic, societal, institutional, and work patterns – the fact that human health interacted with forms of life other than human was considered normal. At its crudest, people knew they needed 'nature' to eat and to survive.

Yet in the late 18th century, an understanding of that connection began to fray. Early political economists argued that nature was bound into humankind's economic affairs, but increasingly, their thinking was retitled as economics alone, as it became distanced from the political and organic.[22] The possibility of living outside or in spite of nature became conceivable for more than the super rich or monarchs or large land-owners, those identified, shortly after the ending of World War 2, as the power élite.[23] As students of public health history know only too well, the possibility of health being malleable became an urgent task. On the one hand, the degradation and pollution from industrialisation worsened health for many. And on the other hand, Europe's economic progress and wealth accrual from industrialisation and unprecedented imperialism spawned the possibility of its improvement. Cities could be paved. Sewage contained. Transport extended. The chaos of Nature tamed or pushed back. The emergence of modern medical and health sciences garnered plaudits as a result. Public health thinking's original and successful efforts were in fact environmental. For that reason alone, now is the time for modern public health thinking to shift into the ecological mode.

Yet today, the inevitability of that kind of health progress is no longer widely shared. As **Wallinga, Rayner and Lang's** paper here reminds us, the brilliance of biological advances such as antibiotics has generated a situation where the technology threatens its own undoing. Such contradictions and undoings are not uncommon in the relationship of political economy to public health. **Mou, Griffiths, Davies and Fong's** paper shows, even as modern China has modernised and industrialised, it has created migration patterns which pose immense strains on health systems. No wonder good people working within those health systems are now championing softer and more complex approaches to the drivers of health. This approach to health sees public health as having to be sensitive to and supporting the material and biological world of ecosystems. **Pencheon's** paper is a testament to efforts by a small team to reduce the impact of the UK's giant National Health Service and to inject ecological public health practice into one of the world's largest employers. **Middleton and Saunders'** paper tells the story of how an ecological public health perspective guided one English town's public health department to pioneer different forms of intervention in a depressed postindustrial region. **Hanlon's** paper also addresses whether ecological public health might both inform action and explain poor public health in another deindustrialised city, Glasgow, Scotland, and inject a cultural dimension into explanations for the Glasgow Effect.

Of course, the definition of health advance as life expectancy is and remains powerful. Rightly so. Yet from the biological and physical sciences there now emerges the possibility that humanity's capacity to exist, let alone advance, looks somewhat shakier. It's not just the threat from climate change or water stress but from the harsh evidence that western life – the very model of progress - is living beyond its means. **Butler, McMichael and Dixon** are an Australian team that has long championed ecological public health thinking and application within epidemiology, led by the late Tony McMichael, an epidemiologist who long championed eco-systems health as the foundation for human

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health.[24,25] **Lang and Rayner's** paper echoes that perspective, and focuses on the argument that economic growth delivers wealth and health, thereby locking public health into a particular definition of progress. A Golden Era of public health and social policy is, they argue, coming to a close, pointing to the need to recalibrate political economy around righting the mismatch of human and environmental health. Ecological public health can fill the gap created by faltering economic growth. **Reiss, Morris and colleagues**, of the collection here, consider whether ecological public health requires a distinct methodology for understanding dilemmas and interventions, arguing that public health must be systematic in its planning and actions.

Is the ecological public health perspective new? No. Ecological thinking, *per se*, emerged with the mid 19th century theories and observations of Charles Darwin, Alfred Russel Wallace, Ernst Haeckel and others. It was preceded by a long period of emergent evolutionary thought ranging from science to art.[26] The term 'ecology' was coined in 1866 by Haeckel and was used initially to indicate the full complexity of life forms, their interactions and evolution. Quickly, however, this perspective fragmented into two discernible strands which still fracture public health understanding. One environmental strand is the biological tradition which today so strongly champions ecological understanding of ecosystems. Another strand has split off into what is often referred to as the social-ecological perspective. Most commonly, this refers back to the commendable work of psychologist Urie Bronfenbrenner,[27] and jumps to the much used Dahlgren and Whitehead rainbow models of health in which individuals or families sit in the middle of a widening arc of factors.[28] In some versions, this human-centred model puts the 'environment' at the outside; in others, it is absent altogether. Modern social ecological thinking is more flexible, of course. But its core failing is to restrict the biological and the material world, or to recall some fictional harmonious golden age of the past, or only to view it through a human lens. This fissure in ecological thinking – the split between external nature and human society – is what now needs to be healed, but in a way which neither reduces human society to biology or biological word to the possibilities of human scientific advance.

Another confusion is the parallel use of the word 'environment', used almost as a synonym. We all use the word environment, unavoidably so. Environmental thinking includes many traditions, progressive and socialistic as well as conservative and individualistic. For some, for example, it stands for a return to a 'natural' past. It was Thomas Carlyle, the 19th century Scottish historian, who established the word 'environment' in modern public usage from a translation of the equivalent German term 'unwelt', as used in the writings of the poet/scientist JW von Goethe. If later writers have complained that Carlyle's understanding contained a translation error [29,30] it was another Victorian, the sociologist Herbert Spencer, who imparted to the term its profile, and broad utility. Spencer, an intellectual forerunner to modern neoliberalism, argued that the rules of human society should directly reflect principles operative in nature. It was Spencer, not Darwin, who coined the expression 'survival of the fittest'.[31] We may think environmentalist, even ecological thought, progressive and benign but politically conservative strands carried on well into the 20th century.[32] Progressive opponents, in contrast, argued for the role of education and democracy, human continuity with nature, and bringing the vital contribution of art into our everyday experience of the world.[33]

One motivation for this collection of papers is thus to assert the case for bridging two of the strands of human existence – the natural and the social – and to re-assert ecology as a way of thinking which link discourses. Where is the sense, let alone scientific rationality, in separating the social from the biological? Why and how has this happened? Why are thousands of researchers and practitioners thinking of health through these split lenses or from camps which barely acknowledge the others' insights? Yet they are and they do. His situation is surely absurd, but it also reflects the long-established dualistic tenor of western philosophy.[34] Unless there are clearer intellectual bridges across different dimensions of health – the material, physiological, social and cultural worlds – the public health world will be doing little but sweep up the pieces (if it can) after the damage is done. Yet the history of public health suggests that great changes and advances require us to change the wider conditions within which normal variations occur.

There is little uniformity in resurgent ecological public health thinking, but there are signs this is emerging. It comes in diverse forms, of course. Nor is uniformity likely. Yet we are now at the point where the obvious can again be re-asserted. Human life depends on nature yet but is undermining it, threatening the means for survival and for progress. In effect, 20th century 'successes' are undermining 21st century health possibilities. This central paradox ought to unite world bodies charged to focus on economics (the Bretton Woods institutions) or on other vital organisational and functional matters (such as the institutions of the United Nations). But they are fractured by traditions bound to an outmoded notion of health which says that health is requires growth and a type of growth – about which, apart from the ritual use of the word 'sustainability', little is said. A revitalised ecological approach to health might be able to cut through much modern cant about technical change being the route to happiness or disease control or social improvement.

To some extent, by re-engaging with the connections between ecology and health, the modern public health movement is rediscovering its own history. For it is again daring to think big and to revive debates about the relationship between humans and nature, and humans and each other. 21st century public health has an important future, indeed, it may be vital for human society as it has been in the past. But only if we reassert the consequences of a more unified and integrated approach and only if we think about the quality of lives and quality of the planet. Collectively, these papers suggest many avenues for work ahead: research, action, organisational and institutional change and more. Above all, it means imparting to public health a new pathway between the present and the desirable and the possible, thus proving that the most vital element to public health progress is the public health imagination.

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