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Letter to the editor: Are indicators telling us the real story about progress?

Closing the gap between the science and politics of progress: Science's greatest challenge

Global politics is based on an outmoded and increasingly destructive model of human progress and development. Can science change a dire situation?

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Introduction

'My view of human progress has stayed surprisingly constant throughout my presidency. The world today, with all its pain and all its sorrow, is more just, more democratic, more free, more tolerant, healthier, wealthier, better educated, more connected, more empathetic than ever before. If you didn't know ahead of time what your social status would be, what your race was, what your gender was, or your sexual orientation was, what country you were living in, and you asked what moment in human history you would like to be born, you'd choose right now.'

Barack Obama, President of the United States 2009-2017 (BBC 2016)

It is unusual for a national leader to articulate his worldview in this way. Nonetheless, Obama's view of progress is one that is, broadly speaking, shared by politicians and governments throughout the developed world and beyond (framed here by the 'identity politics' that characterises political debate today). The view reflects the dominant or orthodox model of development. The United Nations Development Programme has stated that past decades have seen substantial progress in many aspects of human development (UNDP 2014). Most people today are healthier, live longer, are more educated and have more access to goods and services, it says; they also have more power to select leaders, influence public decisions and share knowledge.

However, this model is increasingly at odds with what science tells us about the world. It is not that the specific achievements are wrong, but that they are incomplete, and so present a false picture of progress. The growing gap between the conventional view and the realities of people's lives helps to explain the widespread public disquiet in many countries and its political consequences, evident in growing political volatility and extremism.

The discrepancies between the politics and science of progress arise from the equation of progress with modernisation, whose characteristics include industrialisation, globalisation, democratisation, scientific and technological advances, capitalism, rationalism, consumerism and individualism (Eckersley 2016). Many of these features are part of the processes of cultural Westernisation and material progress (measured as economic growth). Progress indicators focus on those qualities which characterise modernisation and which we celebrate as success or improvement. Western

liberal democracies, which typically occupy all but a few of the top 20 places in progress indices, are presented as models of development for other countries (Eckersley 2016).

Modernity's benefits are counted, but its costs are underestimated. These costs include, especially, the growing impacts of modern ways of life on the natural environment and on human wellbeing - which are, of course inextricably linked. At best, what is measured may be desirable, but not sufficient; at worst, the measures are leading us towards an uncertain and potentially calamitous future. That many of the world's most populous nations, including China, India and Brazil, are, in important respects, following this path of progress greatly exacerbates the global threat. Importantly, the ratio of benefits to costs will change over time: a model of progress that helps humanity at one time in history or at one stage of development will not necessarily suit another. This is especially true of developed countries today, in which aspects of progress have become particularly problematic; developing countries have more to gain, but still face rising costs.

Progress can be defined, and measured, in many ways, as suggested above. In this paper, genuine progress means an improving quality of life: the degree to which societies provide, or people enjoy, the living conditions (social, cultural, economic and environmental) that are conducive to total wellbeing (physical, mental, social and spiritual).

Sustainability

Obama's faith in progress provided the foundation of his ideological commitment to incremental, rather than radical, political change, reflected in his oft-cited view that the arc of history is long, but bends towards justice (BBC 2016). In his snapshot of an improving world, Obama does not mention environmental impacts and the challenge of sustainability. But he has addressed this issue elsewhere, and in a way consistent with his political orthodoxy. For example, he has argued that dealing with climate change need not conflict with economic growth (Obama 2017). Evidence of a 'decoupling' of energy-sector emissions of greenhouse gases and economic growth, he says, 'should put to rest the argument that combatting climate change requires lower growth or a lower standard of living'.

Again, this belief in the desirability and feasibility of continuing economic growth is an article of faith in modern politics. In environmental terms it rests on the notion of dematerialisation or decoupling. It may be possible to decouple growth from fossil fuel use and greenhouse gas emissions by switching to clean, renewable energy, but this does not mean an uncoupling of growth from resource consumption and its environmental impacts. Several new studies have rejected this broader possibility (see box 1).

Furthermore, the goal of decoupling growth and resource consumption obscures the complexity of environmental impacts, which include climate disruption; species extinctions; soil and water loss and degradation; air pollution; declining fisheries; ocean acidification; and disease threats (Barnosky et al. 2016; Walker et al. 2009). In 1992, more than 1700 independent scientists issued a warning to humanity that environmental destruction required a great change in its stewardship of the Earth if 'vast human misery' was to be avoided (Ripple et al. 2017). In 2017, on the 25th anniversary of that warning, more than 15,000 scientists have signed a 'second notice' warning that with the exception of stabilising the stratospheric ozone layer, humanity has failed to make sufficient progress in solving environmental challenges, and 'alarmingly, most of them are getting far worse' (Ripple et al. 2017).

These serious, interconnected, global challenges, resulting from the accelerating scale of human activity, are outstripping the development of institutions to deal with them (Walker et al. 2009). Together with other, social and economic impacts, they risk causing 'synchronous failure', where

stresses within social-ecological systems interact and escalate to spread rapidly across system boundaries, precipitating a global crisis (Homer-Dixon et al. 2015).

Insert Box 1 about here.

Quality of life

Apart from its unsustainability, there is the matter of progress's impacts on wellbeing. By definition, progress should be making life better overall, and most conventional measures show this to be the case (Eckersley 2016). The recent research into progress indicators has focused attention on subjective wellbeing. Commonly measured as self-reported life satisfaction or happiness, subjective wellbeing is believed to capture important subjective elements of progress that other, objective indicators do not. As a recent paper states: 'There appears to be an emerging consensus in the policy community that subjective wellbeing ought to be the key criterion of policy success' (Zagorski et al. 2014).

However, measuring life satisfaction or happiness does not fundamentally alter the dominant view of progress. For example, World Happiness Report scores are strongly correlated with the Human Development Index (based on per capita income, education and life expectancy) (Helliwell et al. 2013). On the face of it, such associations seem persuasive. But subjective-wellbeing indicators may have a Western bias; and they also fail to capture fully the more intangible 'psychosocial dynamics' of our ways of living: the complex interactions and relationships between the subjective and objective worlds (Eckersley 2016). These shape perceptions, expectations and values, and influence the intrinsic meanings of life events and social situations; they frame how we see the world and our place in it, and so what we do in the world.

For example, growth in GDP does not simply make us materially richer, liberating us from scarcity and hardship, and freeing us to live as we wish, as the conventional model assumes. Instead, it is associated with other, cultural changes, such as increasing materialism, which impact profoundly on wellbeing. Materialism – giving priority to money and what it buys – is associated with lower life satisfaction, happiness and vitality, and higher depression and anxiety; less prosocial and cooperative behaviours, and more antisocial and competitive behaviours; and more environmentally damaging and unsustainable choices and lifestyles (Twenge and Kasser 2013).

Similarly, individualism and freedom, once seen as liberating human potential, are now increasingly linked to a heightened sense of risk, insecurity, uncertainty and isolation (Eckersley 2016). Another powerful psychosocial dynamic that derives from Enlightenment beliefs about individual and intellectual freedom is the cultural emergence of the 1960s counter-culture and postmodernism, and their recent and dramatic expression in 'post-truth' politics, with its alternative facts, fake news, and created realities (Andersen 2017, Wight 2017). This development (which has both positive and negative aspects) also defies the dominant narrative of modernisation as progress.

Evidence for modernisation's damage to quality of life and wellbeing is growing. This includes rising rates in developed nations of physical and mental health problems among young people, who should be the greatest beneficiaries of progress (Eckersley 2011). In the US, life expectancy fell in 2015 and 2016, the first two-year decline since 1962-63 (Bernstein and Ingraham 2017). A major (but not the only) reason for the decline is a massive rise in drug-overdose deaths, especially from opioids, which are now the leading cause of death among Americans under 50 (Bernstein and Ingraham 2017; Katz 2017). More than a half of American adults regularly take, on average, four prescription medicines, with one in eight of those aged 12 and older using antidepressants (Carr 2017, Sifferlin 2017).

These findings hardly mark a 'model' society. And while the US is not necessarily representative or typical of Western countries, it expresses clearly the costs of progress as it is pursued. It also exerts a powerful global influence: culturally, economically, environmentally, geopolitically.

Modernity's impacts are also seen in surveys and studies of people's deep concerns about their personal lives, their societies, the world, and the future (see box 2). These perceptions may be intangible and at odds with objective conditions, but they are important to quality of life, with implications for both individual wellbeing and societal functioning (Randle and Eckersley 2015, Randle, Eckersley and Miller 2017).

Public disquiet about modern life has been building for decades. A 1995 study highlighted Americans' deep concerns with their way of life. They believed their priorities were 'out of whack', with materialism, greed and selfishness increasingly dominating American life and crowding out more meaningful values (Harwood Group 1995). People insisted they were talking about a single core problem with many aspects, not a list of separate issues. 'Too much of a good thing' was the phrase many people used, with freedom and material abundance uppermost in their minds.

Insert Box 2 about here.

Politics and science

Psychosocial issues are important in rethinking progress and the modern worldview for several reasons: they add a crucial dimension to the more widely researched biophysical threats to humanity; in challenging conventional notions of wellbeing, they can lessen the widely perceived tension between quality of life and sustainability; being often 'closer to home', they may be a more important impetus for change; and they will affect how fundamentally and adaptively societies and governments respond to global crises (Randle and Eckersley 2015; Eckersley 2016; Randle, Eckersley and Miller 2017).

People's concerns about modern life are finding political expression in increasing extremism, especially on the right, but also the left. A US study found that Americans had since the 1970s become both more independent of political parties and more ideologically extreme (Twenge et al. 2016). The overall trend has been towards more Americans identifying as Republican or conservative. Older people are more likely to be conservative and Republican, but more Millennials (or Gen Y) identified as conservative than did either Gen X or Boomers at the same age, and fewer were Democrats compared with Boomers when they were young.

The trends help to explain the emergence in the 2016 US presidential race of Donald Trump as an 'independent' on the far right, and Bernie Sanders as an 'independent' on the far left, and Trump's eventual victory. This shift is also evident in political developments in the UK and Europe, but not necessarily in the same way: in France, a new centrist party headed by Emmanuel Macron swept aside the previously dominant Socialist and Republican parties; in the UK, Theresa May's Conservatives lost a large lead to a revamped Labour under Jeremy Corbyn championing a socialist agenda; in Germany, Angela Merkel won a fourth term as chancellor, but her ruling coalition lost ground in a surge in support for the far right and (at time of writing) she was struggling to form a government.

Changing the political and cultural status quo runs up against formidable obstacles. One is the inertia in the system, with current ways of doing things locked into place by entrenched and self-perpetuating organisational values and attitudes, and the multitude of existing mechanisms by

which the world is run. Another obstacle is the money and effort that vested political and corporate interests put into maintaining their advantage.

The status quo relies heavily on scientific legitimation. This is evident in the relentless and ruthless efforts of industry after industry to defend itself against evidence of harm by sowing scientific doubt about the evidence, buying influence, and shifting blame (eg., Michaels 2008; Oreskes and Conway 2010). More broadly, a massive and growing media-marketing complex culturally ‘manufactures’ modern, high-consumption lifestyles, which are increasingly inimical to the environment and to health and wellbeing.

This effort extends to the promotion of a worldview that sees human betterment largely in terms of modernisation. The perceived scientific legitimacy of the orthodox model of progress allows governments to avoid confronting its social and environmental damage and destruction (for all its benefits); legitimation disguises the wrongdoing. While science has largely underpinned the orthodox view, science, through research in many disciplines, is now exposing its limitations, flaws and hazards. It is in science’s hands to build on people’s justified unease and their valid insights into its sources to press on all institutions, but especially politics and business, the need for deep change if we are to safeguard humanity’s future.

Alternative worldviews, development models and policy options exist (eg., Eckersley 2016; Cribb 2017; Solón 2017). These are beyond the scope of this paper, which is to make the point that, as Obama’s vision reveals, leaders will not look for a solution if they are not convinced there is a problem. At this level, the task is to enlarge political debate to question the worldviews that underpin politics. This would open the way for far-reaching policy choices that the current status quo precludes. Politics and the media define arbitrarily what warrants coverage and discussion, and much that is important is left out.

Climate change notwithstanding, there is almost no serious discussion of genuine sustainable development; nor is there a serious consideration of health and wellbeing that reaches beyond lifestyle factors and healthcare. Broadly speaking, the mainstream media treat recent political developments as an alarming aberration, and acknowledge neither their deep roots nor their potential to bring about transformative change. As one commentator noted of the US, the ‘respectable press’ is captivated by the theme of legitimacy, which it believes Trump lacks and which defines its war on Trump; ‘...as long as the news media understand that war as a crusade to re-establish the old rules of legitimacy, they are going to continue to fail’ (Frank 2017).

There is no valid reason why the worldview of leaders could not be a central theme of political debate. This would be very different from today’s emphasis on ‘issue’ and ‘identity’ politics, whose elements are kept firmly within the conventional framework of progress. The interconnected challenges facing humanity cannot be solved by focusing on the discrete, specific problems that characterise and define today’s politics. However legitimate the concerns are in themselves, they have little bearing on the global threats considered in this paper.

Even climate change, for all the policy and technological innovation it is attracting, is unlikely to be resolved in isolation and without whole-system, societal changes: a recent analysis shows that with current emission mitigation policies, the likely median temperature increase by 2100 is 3.2°C, with only a 5% chance of keeping the rise to under 2°C, the goal of the 2015 Paris Agreement (Raftery et al. 2017). In other words, and paradoxically, worthwhile as the specific goals of current politics are, they can also distract governments and populations from the deeper, systemic challenges and problems.

However, recent events have rocked the political establishment and threatened the existing order. The growing political volatility could open the way for the debate we need to have about the sort of society we want to live in, and there are signs that this is happening. An optimal outcome is far from certain, however. For example, addressing global threats and challenges requires new institutions, more interactions between institutions, and a greater willingness to enforce agreements (Walker et al. 2009). The loss of faith in institutions, which has triggered a crisis of political legitimacy, could militate against this more extensive and balanced form of globalisation and international cooperation. As problems multiply, intensify and coalesce, the world could become entirely preoccupied with the crises, and continue to neglect the long-term requirements of a high, lasting and equitable quality of life.

Science could play a decisive role in keeping the conversation focused on what really matters. This could be its biggest challenge, its greatest contribution to humanity. This role will require greater collaboration between the natural and social sciences and the humanities; more engagement with other sectors of society such as politics, business, religion and the arts; and better communication with the public, going well beyond current improvements in these areas (Barnosky et al. 2016). The United Nations Sustainable Development Goals (<http://www.un.org/sustainabledevelopment/>) are useful, but remain embedded in the orthodox model of development. The UN Intergovernmental Panel on Climate Change (<http://www.ipcc.ch/>) provides one model for how to move forward if it can be applied to the much larger task of genuine sustainable development - social, economic and environmental.

Social indicators research can contribute to this wider role of science in redefining progress. It has already led to more comprehensive indices and indicator sets to account more fully for a society's performance (Eckersley 2016). It needs to accept, given the nature of complex adaptive systems (which human societies are), that a single index, which accurately and fairly measures and compares how well nations are faring, is probably beyond its reach; and that, similarly, the performance of the whole system cannot be derived from that of its individual components - that is, by using indicator sets or composite indices - because with such systems the whole is more than the sum of its parts (Eckersley 2016). Another challenge posed by complexity science to this research is that existing measures do not allow the anticipation of sudden, non-linear, and possibly irreversible, changes in a system, which can threaten catastrophic failure.

Instead, indicators research could shift its emphasis away from the goal of developing better indices of progress, and towards using a much wider range of indicators and other research to inform a more open-ended discussion about the meaning and purpose of progress, and so contribute to creating deeper, richer stories of humanity and its future.

Framed in terms of paradigm shifts (Kuhn 1970), the current paradigm of human progress is confronted by a growing body of anomalous and contradictory evidence that it cannot explain or resolve. It needs to be replaced with a new paradigm that better acknowledges and reflects a world of complexity, incommensurability, ambiguity and subjectivity.

Conclusion

The vigour and resilience of civilisations rest on the optimism and confidence of their citizens. For decades, people have been concerned about where we are going as a society, a civilisation, a species; for decades, politics has failed to respond adequately to this profound disquiet. There is now so much at stake.

Fundamentally, the problem is that politics is defined by a model of human progress and development that is flawed in two fundamental respects: it is environmentally unsustainable, and it is lowering quality of life. Evidence of both failings is getting stronger, including that economic growth cannot be 'decoupled' from resource consumption and environmental impacts, and that progress as we pursue it is contributing to growing disillusion with modern life and distrust of institutions, especially government.

Governments and leaders will not implement solutions to the challenges posed by human progress and sustainable development if they are not convinced there is a problem, which they are not at present. Perceived scientific legitimacy is a central justification for these political perceptions. Changing these perceptions is arguably science's greatest challenge today.

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Box 1 - Unsustainable progress

A modelling of growth and its environmental impacts, based on historical data and projections, found that 'growth in GDP ultimately cannot plausibly be decoupled from growth in material and energy use, demonstrating categorically that GDP growth cannot be sustained indefinitely' (Ward et al. 2016). The study concludes that society can sustainably improve societal wellbeing only by discarding GDP growth as a societal goal in favor of more comprehensive measures of wellbeing.

According to another model, global material stocks (timber, metal, concrete, asphalt, bricks, sand and gravel, etc.) accumulating in buildings, infrastructure and machinery increased 23-fold between 1900 and 2010, and now total 800 billion tonnes, two-thirds of it in industrialized nations (Krausmann et al. 2017). Material stocks would increase a further four-fold if stocks in developing economies converge with those in industrial countries. 'Saturation, or significant decoupling of stock growth from economic development, is not in sight', the study states. One strategy for building more sustainably is to create a more 'circular economy', which emphasises re-use and recycling, turning consumption and production into a loop.

A study of the 'material footprint' of nations, the total amount of primary resources required to service domestic consumption (so excluding exports and including imports), found it was 20-40 tonnes per person in most developed nations in 2008 (Wiedmann et al. 2015)). Contrary to claims that economic growth is being uncoupled from resource consumption, and so sustainable, every 10% increase in GDP increased the average national material footprint by 6%. By 2050, a global population of 9 billion people would require an estimated 270 billion tonnes of natural resources to fuel the level of consumption of OECD countries, compared to the 70 billion tonnes consumed in 2010.

A study comparing countries' Human Development Index scores with their per capita Ecological Footprints shows environmental impacts rise steeply with high development (Moran et al. 2008). Cuba was the only country to meet the requirements for both high development and global sustainability. Among high-income countries over the previous 25 years, improvements in index scores came with disproportionately larger increases in their footprints, showing a movement away from sustainability. Some lower-income countries, in contrast, achieved higher levels of development without a corresponding increase in their footprints.

A systematic literature review of 94 studies has concluded that that state of the global environment has continued to deteriorate (Howes et al. 2017). Despite a commitment by governments around the world to sustainable development, supported by an array of agreements, strategies, laws, and programs, 'decades of scientific monitoring indicate that the world is no closer to environmental sustainability and in many respects the situation is getting worse'. Key factors behind the failure included: conflict between the objectives of environmental policies and economic development; a lack of capacity and/or political will to implement effective policies; and a failure to communicate to key stakeholders the seriousness of sustainability issues and the need for urgent change.

More optimistically, but still theoretical and representing only partial or relative decoupling, a study using a multi-regional modelling framework to develop projections to 2050, found that under existing trends natural resource extraction would increase almost 120% from 84 to 184 billion tonnes a year from 2015 to 2050, and greenhouse gas emissions would increase by over 40%, due to global economic activity more than doubling (Hatfield -Dodds et al. 2017). However, ambitious resource efficiency and climate mitigation policies reduce resource extraction by up to 28% below existing trends by 2050, and greenhouse gas emissions to 63% below 2015 levels. Resource efficiency could provide 'pro-growth pro-environment policies with global benefits of US\$2.4 trillion in 2050, and ease the politics of shifting towards sustainability', the study says.

Box 2 - Growing public unease and distrust

A 2013 survey investigated the perceived probability of future threats to humanity in four Western nations: the US, UK, Canada and Australia (Randle and Eckersley 2015). Overall, across the four countries, 54% of people rated the risk of 'our way of life ending' within the next 100 years at 50% or greater, while 24% rated the risk of 'humans being wiped out' at 50% or greater. Three-quarters (78%) agreed that 'we need to transform our worldview and way of life if we are to create a better future for the world'. Over a third (36%, US 47%) agreed that 'we are facing a final conflict between good and evil in the world'. Reflecting a widespread, shared concern for humanity, the responses were relatively uniform across countries, age groups, gender and education level.

The same survey also asked about levels of concern over a wide range of personal and societal issues (Randle, Eckersley and Miller 2017). Overall, 49% were moderately or seriously concerned about the personal issues, with health, wellbeing and financial concerns topping the ranking. An average of 41% were moderately or seriously concerned about societal issues, with the state of national politics, the breakdown of moral values and corruption among the top concerns, ranking ahead of economic and environmental matters. Being concerned, especially about personal issues, was associated with personal stress.

A study investigated 'societal unease', defined as a latent concern among citizens in contemporary western countries about the precarious state of society (Steenvoorden 2015). This concern arose from the 'perceived unmanageable deterioration' of five fundamental aspects of society: distrust in human capability to improve things, loss of ideology, decline of political power, decline of community, and socio-economic vulnerability. Societal unease was only weakly related to personal happiness, proving, the author says, that 'high levels of private contentment are not to be mistaken for public contentment'.

A 2016 survey of 22 developed and developing countries shows that people around the world believe 'the system' no longer serves them, and that life is getting worse (Ipsos MORI 2017). Across the countries, an average of 57% believed their country was in decline; 64% said traditional parties and politicians did not care about them; 69% believed the economy was rigged to advantage the rich and powerful. More believed their generation had had a worse life than their parents, and that life for today's youth would be worse than their parents', than believed life was getting better.

A 2016 survey of trust in 28 countries, both developed and developing, found that trust had become a deciding factor in whether a country can function (Edelman 2017). Corruption, globalisation and technological change were weakening trust in global institutions; there was growing despair about the future, a lack of confidence in the possibility of a better life for one's family. Two thirds of the countries were now 'distrusters', with less than 50% of people trusting the major institutions of government, business, media and NGOs. Across the countries, only 15% believed the present system was working; more than three quarters agreed the system was biased against regular people and favoured the rich and powerful; and more than two thirds did not have confidence that current leaders could address their country's challenges.

A 2017 survey asked people in 38 countries whether life in their country was better or worse than it was 50 years ago 'for people like me' (Pew Research Center 2017). The global medians were 38% worse, 43% better. In the US, 41% said worse, 37% better; in the UK, 31% said worse, 45% better. Hardly convincing evidence of progress, the results may also have a positive bias because the survey framed the question in personal terms ('people like me') and specified a timeframe ('50 years ago') that many respondents had not experienced, both of which can influence choices (Eckersley 2000). In this survey, 50% of Australians said life was better and 33% that it was worse; in a 2015 poll only 16% said quality of life in Australia, 'taking into account social, economic and environmental conditions and trends', was getting better, while 49% thought it was getting worse (Eckersley 2016).