

Editorial: The accelerating pace of environmental change

Mark Everard reviews how a growing environmental awareness has shaped our world.

I make no apology for speaking about lived experiences in addition to scientific and policy advancements made in those distant days of the 1970s. The decade was formative for the establishment of environmental science but also for giving voice to emerging and often partly formed concerns about what we were doing to the natural world, and by implication to ourselves. This has all had significant cumulative influence on the policy world.

In reality, passion, science and policy were, and remain, intimately interlinked in the founding of societal movements. Our burning passion back in those heady days – our sense of injustice about a future being destroyed before our eyes – informed the newly evolving interdisciplinary environmental sciences and drove the issues we needed to investigate. These interconnected social and knowledge-based forces in turn shaped policy priorities, including what strands of science would be funded. To describe the 1970s in desiccated ‘scientific’ terms is to lose the essence of what it was like to live through those times and the constellation of angst, rage, knowledge acquisition, protest and advocacy that combined to foment a revolution in environmental consciousness.

For all that the period around 1972 was axial, it did not arrive out of nowhere. Reflecting again into lived experience, I still recall with some distress the live broadcasting of the grounding of the oil tanker SS Torrey Canyon off the western coast of Cornwall, England, in March 1967, releasing most of her cargo of 110,000 tonnes of crude oil with devastating impacts on sea birds and other wildlife. Perhaps heightened by my part-Japanese heritage, I was also starkly aware, even as a youngster, of the horrific human toll of Minamata disease: severe neurological damage from bioaccumulation of mercury released by a chemical factory into Minamata Bay, a practice that had been occurring for three decades and did not end until 1968.

These and other environmental shocks unsettled the almost uniformly optimistic perception of technological progress instilled in those of us who stayed up into the small hours in July 1969 to watch live video feed from the Apollo 11 lunar mission as Neil Armstrong made his ‘giant leap for mankind’, and watched news of the everyday miracles of breakthroughs in feeding the world and irrigating former deserts. I also clearly recall how visceral my reactions were when seeing a much-loved microcosm of rough ground, home to bugs and beasts that could keep me enthralled for hours, expunged by a single scoop of a digger. So too, the elimination of a favourite pond and woodland to make way for a road bypass, and the disconnection of a beloved reach of river bypassed by a flood relief channel accelerating flows to sea (and accidentally flooding downstream towns instead).

Of the ground-breaking 1972 Club of Rome report *The Limits to Growth*[1], I was more a passenger than a direct reader. But one inspired geography teacher, based on his reading of the report, set aside rote learning of the principal crops and economic output of Chile – facts deemed necessary to pass exams – to quiz us mid-teenagers on our feelings about the way we were burning up finite oil reserves when we might need them in future for durable construction and infrastructure materials, or the prospect that by the year 2000 (remember that!) a family might only have access to sufficient power to run a 15-watt bulb into the dark evenings.

My more direct perceptions of the time were, as often happens in my life, shaped by fish. If you recall, this was also the era of successive waves of ‘cod wars’ as the UK and Iceland battled out territorial rights to exploit or protect dwindling sea fish stocks. It was also a time when bright red tins of pilchards packed in tomato sauce, a cheap staple of us less financially advantaged folks, suddenly became unavailable when sardine stocks crashed. In British fresh waters, the decline of the

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burbot (last confirmed capture in 1969 and since declared extinct in our shores) also signalled how technological progress, particularly in land use, could drive a species over the brink. (Loss of burbot in Britain is often claimed through lazy assumptions based on life cycles of quite different genetic ice lake strains to result from climate change but, as detailed in *Burbot: Conserving the Enigmatic Freshwater Codfish*[2], it was the drainage and eradication of lowland floodplain habitat inundated for months during midwinter that dealt the killer blow.)

These strands of awareness and mounting societal, and ultimately political, concern drove innovation in technological advancements, the founding of non-governmental organisations (NGO) to harness that societal concern, and of initiatives such as the UK-wide Breeding Birds Survey led by the British Trust for Ornithology. The 1972 Stockholm Conference – the United Nations Conference on the Human Environment – and also the instigation of the UN Environment Programme to coordinate action at intergovernmental level and the founding of professional associations such as the IES to promote extension and uptake of environmental science, were all to flow from that potent mix of passion, science and politics, disrupting many former ‘safe’ norms and assumptions, and setting us instead on a pathway to where we stand today with all its frustrating imperfections and successes.

There is often an expectation that environmental and other scientists should be dispassionate. Yet environmental science exists precisely because enough people were passionate about chasing down causes, consequences and solutions spanning traditional firewalls between scientific and other disciplines, and eager to petition for educational and policy change while recognising the importance of integrating social, economic and biophysical sciences, founding courses and agitating for research funding streams. A key lesson I take from reflecting on those exhilarating days of the 1970s is that, while environmental science itself must aspire to robustness and objectivity, the passion, purpose and policy contexts that feed it and that it in turn informs must never be lost if it is to continue to drive forward desperately needed societal change.

It is for this reason that I welcome (if not sanction every strategy of) the new wave of activism, as young people once again mobilise to foment change, realising that promises from unbridled capitalism alone are a chimera and can only continue to fail to offer them security and fulfilment while foundational ecosystem resources dwindle. It is good to see these concerned people turning to the environmental sciences to inform their disquiet, actions and campaigning, rejecting the threadbare and often token action around environmental protection and sustainable development, and asking for more of the science base to further inform solutions.

Viewing today as the midpoint in a century-long journey, we are again where we were in the early 1970s. There are new and robustly evidenced revelations about the dire implications of climate instability and the biodiversity crises, including a precipitous decline of insect populations and functionally important global habitat types. This, combined with the spiralling demands of a human population that is not only booming but increasingly living middle-class lifestyles, with the associated increased demands this brings, and compounded by widening disparities between rich and poor, sets a new baseline of concern and search for solutions. The underlying principle remains undimmed – that we are destroying the roots of the tree of life upon which we utterly depend – but with a human population that is 46 per cent higher (with an urbanised proportion rising from 37 per cent to 57 per cent) and massive declines in biodiversity, wild biomass and ecosystem resilience.

If ever there was a time to redouble our commitment to informative and policy-relevant research and its promulgation in the reshaping of a more secure society by the 2070s, it is now while there is still at least a prospect of averting runaway apocalyptic prognoses and instead shaping a more secure future of opportunity for human fulfilment and equity. This special edition brings together academic, consultancy, green politics, NGO, youth activism and other voices to explore the legacy of

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the past half-century and to glimpse the priorities of the next half of this century-long journey of societal transformation.

Sara Parkin kicks off this edition by asking, 'What does good look like?' and outlining the lessons learnt from the past 50 years as well as looking to the future. Representing the Club of Rome, Carlos Alvarez Pereira then harks back to the 1972 *The Limits to Growth* report. Importantly, he also projects forward to consider the importance of the 'fifth element': re-learning what we have known for 50 years but putting it into human-centred rather than narrower technical framings.

Emanuela Orlando provides us with an illuminating political and legal history, with a principal focus on the evolution of international environmental law. The growth of the environmental industry is then addressed by Eleni Antoniadou Snell, recognising that this industry simply did not exist half a century ago but now covers numerous specialities and career paths. One such growth sector is education, and Jim Longhurst reviews the changing landscape of environmental science taught provision over the past 50 years.

There is an overriding need to move from historic, narrow disciplinary thinking if we are to make real progress with sustainable development, and Richard Blume and Stanley Nyoni tackle this in their contribution on sustainable decision-making for systems change. There are also significant questions about how far and fast society would have moved without the involvement of NGOs, a topic tackled by Paul Johnston, David Santillo and Simon Black.

Another discipline and career path that did not exist 50 years ago was that of environmental economics, the two disciplines formerly seen as opposites. Bill Watts brings his professional lifetime to bear on the development and mainstreaming of this with practical examples to demonstrate the evolution of environmental economics in English public policy. The emergence of green politics in the UK is a further valuable contribution from Sandy Irvine, documenting the shifting landscape and influence of this emergent sphere of political concern.

This special edition concludes with the voices of the rising generation, those who will inhabit the future to 2070 and beyond and who have the passion to shape it into a more sustainable and habitable form. The concluding article on our legacy and the next generation's hopes for the future includes contributions from Mya-Rose Craig, Charlie Murphy and Phoebe Hanson. It is only right that we close with voices from youth activism, of those that will inherit that distant future and shape the pathway towards it. This rising generation has in large measure seen through the baseless promises of material prosperity and security promulgated by unconstrained capitalism mining a degraded and fast-disintegrating base of natural resources. This generation knows it has nothing to lose, emboldening it to petition and innovate for a different trajectory shaped by eventual achievement of a sustainable resolution between humanity and supportive ecosystems. This generation may at last resurrect the bold if largely now submerged intergenerational commitment explicit in the Brundtland Commission's definition of sustainable development, advocating us now to develop in ways that meet 'the needs of the present without compromising the ability of future generations to meet their own needs'[3]. What legacy have we fashioned into society's journey from 1972, and what must we yet achieve by 2072?

References

[1] Meadows, D.H., Meadows, D., Randers, J. and Behrens, W.W. III. (1972) *The Limits to Growth*. <https://www.donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf> (Accessed: 29 May 2022).

[2] Everard, M. (2021) *Burbot: conserving the enigmatic freshwater codfish*. Essex: 5M Books.

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[3] World Commission on Environment and Development (1987) *Our Common Future*. Oxford: Oxford University Press.

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