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As Director-General of South Africa's Department of Water Affairs and Forestry (1997-2005), Mike led development of new policy and legislation; investment programmes that gave millions of people access to safe water and sanitation; and water-sharing negotiations with Mozambique, Swaziland and Lesotho that unlocked major water and agricultural investments. He previously worked for the Development Bank of Southern Africa (1988-2014); and managed water programmes for the Mozambique Government (1979-1988). His earlier writing on nutrition, health and development was widely commended and had significant impact on global public policy.

'Capturing the Narrative' is Bad for Democracy and Sustainable Development

In a number of areas critical to the future welfare of South African society, debates have been hijacked by environmental and social advocates who abuse democratic processes to enforce their preferences. This constrains the ability of state and private sector alike to take expedient action in support of national development goals. In their desire to 'capture the narrative', activists promote approaches that are not technically feasible, damaging both the wider community and environment that they claim to protect as well as undermining the democracy that they exploit.

'Market failure' or deliberately distorted discourses?

Dams are bad; they damage the natural environment and reduce human welfare. Any system of water management that uses such infrastructure is inherently anti-democratic; if the interested parties would just acknowledge that water is essentially an economic good as well as a human right, they could sit around a table and agree how best to make it available without infernal infrastructures.

It's a bizarre set of propositions but reflects a discourse that has been mainstreamed in Europe and North America and forcefully promoted elsewhere, including South Africa. It begs the question of how and why influential groups in a modern world, which is deluged with information, take such positions; why they abuse democratic processes to block action in ways that are detrimental to the welfare of the wider society around them as well as to the environment which they profess to protect.

Some would describe what is happening as a classic and systemic market failure. But markets are supposed to fail because of information and power asymmetries. Some people know more than others and have more power over decisions. Yet, that is no longer a good enough explanation. In many of the societal debates about the environment and natural resources that I am concerned with, the key information is generally in the public domain. And it is

usually people with access to information, although not perhaps fully understanding it, who advocate these strange positions.

I view the world through the lens of water. So I came to this puzzle after some years trying to understand how a couple of really dysfunctional paradigms had captured a mass audience and made it unnecessarily difficult to ensure that people were reliably supplied with the water they need.

My first reference was to Thomas Kuhn who, in the 1960s, had tried to explain that scientific revolutions did not come about easily. In many fields of science, there was a conventional wisdom that was very resilient to challenge even though it might confront some uncomfortable unanswered questions or anomalies. But a key feature of scientific revolutions, said Kuhn, was that they were driven not just by the failure of existing paradigms (theories; best knowledge) to account satisfactorily for what is actually observed but by the allure of those that were emerging. And the attraction of these new paradigms lay not just in their ability to explain discordant observations but in their promise of asking new questions, opening new approaches and creating opportunities to produce useful new knowledge.

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The mythologies of renewable energy

Unfortunately, Kuhn does not help us to understand the emergence of today's inherently contradictory positions on a whole range of apparently technical questions. A few examples.

That story about dams. The critics of dams invariably live in places where their water supply can only be assured because there is storage in the system (a dam or ten). In variable climates (think California, or South Africa but even in soggy Britain), rainfall varies substantially across and between the years. Only with storage can a steady and reliable flow be made available to meet peoples' needs – and expectations.

Even worse distortions occur in the domain of energy and climate change. So there is a widespread belief that South Africans could solve our energy problems by investing in more solar power – well, we certainly have more sun than most countries, don't we? It is also claimed that solar and wind generates cheaper electricity than conventional sources. And, it is believed that our private sector procurement of solar power has caused prices to fall dramatically to just 25% of where they were 4 years ago. On the other hand, nuclear power is dismissed as unthinkable – unaffordable and dangerous.

All of those beliefs and assertions are simply wrong; more precisely, they do not meet the test of evidence or demonstration.

The most obvious example is the notion that solar power can solve South Africa's electricity problems. It can't, for the simple reason that people (and many of the economic activities on which we depend) use energy at night when no power is generated by photo-voltaic panels. At present, it is very difficult and expensive to store electricity in bulk. The best way to do it is to build pumped storage schemes that use electricity during the day to pump water to a high level dam and then let it run down at night, to generate electricity. Essentially, for solar to be the sole source of power, you



Wind farm in New Zealand

And what about the other claim, that wind and solar generation is now cheaper than conventional energy. To 'demonstrate' this, advocates present a 'levelised cost' of electricity from the different sources; in these terms, the cost of electricity generated by wind and solar is indeed in the same region as many conventional alternatives.

have to build a large hydroelectric power station. Why not just build a power station?

The problem with wind is similar. Backup generators must be built to provide power when the wind stops blowing. Since conventional coal and nuclear power stations cannot respond fast enough, gas fired power plants are used. But their owners and operators have to be paid for the times when the plant is not used as well as when it is generating. And, despite the increased cost, there is often limited saving on emissions. Worse, as operators in Ontario, Canada, have found, fluctuations in the supply of solar and wind power have in the past required nuclear power stations to shut down and be

replaced by gas. That actually increased the emissions from their systems (as has also happened in Germany after their nuclear plants were closed and coal fired stations used instead, perhaps to be replaced by slightly cleaner gas).

Reliability suffers as well. In Britain, where coal fired power stations have been closed because priority has been given to wind generation, big electricity users are reported (by the managers of its National Grid) to face power cuts in the 2015/16 winter because margins of safety are descending to South African levels.

What about the falling price of solar generation? Prices have indeed come down dramatically but this was not a South African success. It happened worldwide, the result of oversupply as many countries reduced subsidies because integration challenges were leading to soaring system costs. So if we had delayed by four years, the same investment would have bought more than treble the capacity; this is a renewable 'win'!

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Koeberg power station

electricity from the different sources; in these terms, the cost of electricity generated by wind and solar is indeed in the same region as many conventional alternatives. But, unlike the renewables, the 'conventionals' produce energy on demand which makes its value-in-use much greater.

Environmentalists always insist that 'externalities' of business as usual should be accounted for. But they turn a blind eye to the massive externalities associated with wind and solar generation. Those include the cost of additional backup and storage required to integrate them into a society's supply as well as the cost of grid expansions which will be used less efficiently than in conventional systems (because at least 75% of the time they will not be carrying power).

In jurisdictions like Canada and parts of Europe, where there is a market for electricity, those externalities are now visible, reflected in the negative prices 'paid' for excess solar and wind energy at times when generation is high and demand is low. Renewable producers have to pay to be allowed to put their production on the grid!

The final incongruity, in a world desirous of achieving emissions-free electricity generation, is opposition to nuclear power. Empirically, nuclear has been demonstrated to be reliable and cheap over the long term. Koeberg in Cape Town, the lowest cost unit in Eskom's fleet, is evidence of that. France's economy has been fueled by nuclear for a couple of generations now, often usefully supporting its greener neighbours. While safety concerns have been raised, the evidence is overwhelming that the risks to life and health from conventional coal and gas power are far greater. Difficulties in disposing of waste are in large measure an artifact of opposition: conditions are imposed on nuclear that are not applied to other, equally dangerous, products. But, despite the evidence, the dominant discourse about

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nuclear remains one of high cost and serious risks. Its essentially emission-free character is ignored or challenged.

Deliberative democracy – we talk until you agree

How is it possible to maintain discourses that are so distant from the underlying information, over such a long period? Why do significant groups of reasonably intelligent people choose to abandon science in favour of belief? In the first instance, I blame German political philosopher Jurgen Habermas. Another child of the 60s, he has been trying, in a very Germanic manner, to understand the nature and future of modern democracies.

My European water colleagues loved his notion of deliberative democracy in which, as they described it:

“... actors in society seek to reach common understanding and coordinate actions by reasoned argument, consensus, and cooperation rather than strategic action strictly in pursuit of their own goals.”

So, to manage water resources, they proposed institutions with mandates and scales that excluded most other groups; making river basins the frame for decisions about water. This isolated water management discussions from many water users and broader considerations, and allowed activists to dominate the debates, at least until they began to impact on substantial interests.

One consequence, in water, was that practitioners have been expected to spend time sitting in endless round-table meetings trying to come to agreement with often self-appointed ‘stakeholders’ about some fairly basic conflicts of interest – the kind of conflicts that are, in the end, usually resolved, when they reach crisis point, through the exercise of political power in favour of whatever balance between technical reality, money and the majority is momentarily most practical and opportune.

But this Habermasian democracy also alerted environmental activists to other tactics, specifically creating incentives for them to move from ‘forum-shopping’ to ‘forum creation’. So, to manage water resources, they proposed institutions with mandates and scales that excluded most other groups; making river basins the frame for decisions about water. This isolated water management discussions from many water users and broader considerations, and allowed activists to dominate the debates, at least until they began to impact on substantial interests.

In Southern Africa, such narratives dominated the discourse because the activists mediated access to donor monies. So you will be told, for instance, that Botswana and Namibia are both water scarce. In fact, they share a river (the Okavango) the same size as the Orange. The latter supports more than half of SA’s economy and population in and beyond the basin. Decisions about the Okavango, in this imposed view of the world, should be taken by the 100 000 odd people who live in the basin of the river, rather than the four million people in two countries that could benefit from its waters. This suits those who want to give priority to environmental protection.

This rescaling of management has not worked so well in energy where communities are directly interconnected by technology.

Here, another stream of ideas has been tapped. Drawing on Foucault and the other post-modernists, activists have invoked the notion that subjective views and beliefs

must be given equal weight. Crudely, they encouraged the belief that any position on the subject at hand, however whacky, has to be treated with seriousness and respect.

Even for an engineer, it is clear that this is not an unreasonable position in the social domain, where it began. So in a debate about whether the denizens of Flanders or Oranje should be allowed autonomy of decision-making on their affairs, it is probably sensible to start from their perceptions about their place in the wider society. But to answer a technical question like “can a standalone solar panel supply electricity at night”, it is unhelpful and arguably inappropriate to begin with such subjective views.

But driven by a desire to enforce a Gramscian hegemony, an unholy merger of subjectivism and deliberative democracy has been applied to science and technology. Discourses based on spurious science are used to promote an illusion of social alternatives. Drawing from Habermas, these post-moderns have seen the opportunity to gatecrash the forums in which the technical discussions are held. Once there, they seek to drive the discourse using Foucaultian protection for the subjective. They demand that their unfeasible desires should be given the same weight and consideration as proposals that emerge from qualified technical processes. So, in the name of ‘capturing the discourse’, they drive Kuhnian scientific paradigms in reverse – from being better at explaining the world in which we live, to worse.

Some examples of post-modern environmental science and its impacts

These efforts seldom achieve their desired outcomes, save to achieve paralysis, because they ensure that the debates are distorted beyond recognition – or usefulness.

Shale gas provides an instructive example. A domestic source of gas would greatly assist South Africa in making the transition from coal to less CO₂ intensive modes of electricity production. But exploration for shale gas, of which there is a substantial but uncertain potential, has been stalled for years by environmental objections. Drawing from campaigns in the USA, the debate has been flooded with warnings of water pollution and toxins in drilling fluids, ignoring the fact that many of the technologies associated with fracking are already in use in many parts of the country, at a far larger scale, in existing mining operations. The concerns about the impact on global warming, if any, of leakage of gas during production are equally far outweighed by the more pressing impacts, orders of magnitude greater, of coal mining and waste disposal.

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The net effect of these campaigns is to increase uncertainty about the sources of gas. Yet this will be needed if CO₂ emissions are to be reduced by increasing the proportion of renewables in SA's energy mix and reducing coal use. As a consequence, dependence on coal (and its production of CO₂) has continued, the cost of electricity has risen while the integration of renewables will be hindered.

Back in the water domain, two examples stand out. One prolific social activist still writes regularly implying that 10 million people were disconnected from water supplies for nonpayment (by the Mbeki government). He neglects to mention that this interpretation was rejected and withdrawn by its original authors more than a decade ago. He also fails to mention that the survey from which it was drawn showed that far

more people were deprived of water through broken pipes and because overuse in one area reduced supplies in others, often for weeks at a time. This unhelpfully diverted attention from the real crisis which is municipal management and maintenance.

A similar situation has occurred in the now notorious case of acid mine drainage. Gauteng's old gold mines certainly pose a residual problem. Water drains from the surface through old shafts and stream beds and passes through the old workings, leaching out sulfate salts that, if and when they reach the surface, pollute streams and rivers. That potentially adds about 15% to the already problematic existing levels of salts that come from farms, industries and cities. The most effective way to address the problem is to stop water from getting into the workings in the first place. Ironically, a fair amount of this comes from nature conservation areas and from the 'mining' of

old mine dumps using hydraulic jets to liquify the mine waste for transport and processing. This focus on pumping out mine water and treating it at a profit contributes to the continuation not the resolution of the problem.

But after evaluating project experience in a number of sectors, the worst risk by far, in terms of its likely impact, turned out to be the "Sting factor"; not 'ordinary' corruption but rather the impact of campaigns which mobilised a celebrity (like Gordon Sumner, aka Sting) to oppose the project.

At a generic level, the practice head of a large global engineering organisation was recently commissioned by a group of financial institutions to identify the most serious risks that affected large projects and how they could be mitigated. Some of the risks were obvious; corruption of different forms, including blackmail by regulatory authorities as well as clients; extreme weather, political change, and economic melt-down were all on the list. But after evaluating project experience in a

number of sectors, the worst risk by far, in terms of its likely impact, turned out to be the "Sting factor"; not 'ordinary' corruption but rather the impact of campaigns which mobilised a celebrity (like Gordon Sumner, *aka* Sting) to oppose the project.

Publicly orchestrated, celebrity-supported, opposition to major projects often imposed extremely long delays as well as high costs to meet demands for project changes. I was reminded of the case of the Bujagali hydropower dam in Uganda, opposed by a group of white water rafters, with assistance from an American NGO. The project was delayed for five years, which cost the country 2% of GDP a year. My calculations suggested that this resulted in as many as 10 000 additional child deaths in the country (the consequence of increased unemployment and poverty as factories closed).

Motivations: round up the usual suspects

Why are such positions pursued? As already indicated, commercial gain is a surprisingly common motive; quite often, the broader material position of the lead actors guides the positions that they take while discourses are also fabricated to 'purchase' allegiances and legitimacy in activist and academic circles. But more germane to the situation of the state in the nation, is the more or less obvious pursuit of political power and influence.

The business/environment alliance can be particularly pernicious. Many actors exploit the "green is good" narrative to sell a service or a product in which they have an interest, with environmentalists providing 'green cover' for profitable business. The panic in Gauteng over fears that acid water from the mines would dissolve the very foundations of Johannesburg is a case in point. Treating waste once it emerges is



eMalabeni Water Reclamation Plant

potentially a profitable business. And some of the most vehement 'expert' advocates worked for companies that sought to profit from the urgent work that they deemed necessary.

That profit depends on convincing the polity to use a particular proprietary technology or to allow private operators to process it and introduce it into the public supply, at public expense. Private operators certainly have no interest in reducing the scale of the problem by reducing water ingress; but they have been loud in their lobbying and advocacy for government to spend its public money on their proprietary solutions.

Beyond money, there is often the simple desire to impose personal preferences on the wider community. In the shale gas debate, as in the Bujagali dam case, the mobilizing forces have been a handful of wealthy landowners or foreign *hobbyists* who are defending their enjoyment of a privileged 'sense of place' at the expense of poor local residents and the wider economy.

Just the other day, a well known environmental activist explained how South Africa should deal with the intermittency and unpredictability that characterizes wind and solar energy. After waffling for a while about compressed air storage (a hugely inefficient process that involves a lot of hot air), he came to the core of his belief, if not his argument:-

"We must get used to the intermittency and learn to value it and live with it", he said. "Look at how load shedding has reinforced family values as families have to gather together around a candle at dinner time."

People must be free to choose to live in the dark and eat raw vegetables (provided they do not inflict unhealthy behavior on their dependent children). But the assumption

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that such choices can be enforced on the wider community is troubling particularly when the proponents can usually afford alternatives (generator and solar panel usage is overwhelmingly the privilege of wealthy classes). And the abuse of the imperfect instruments of democracy must be a concern.

Beyond profit and privilege, opportunist and populist community politics also play an important part in many environmental campaigns. It is much easier to mobilise poor communities to demand 'more' rather than to use less, even if that would improve the conditions of all, not least by releasing resources for other purposes. So campaigns to increase the allocation of free basic water have provided a popular platform for social activism, with predictable outcomes: Municipalities have curbed access to free basic water through the introduction of means testing, which inevitably excludes many of the people most in need. Meanwhile, undisciplined use continues to contribute to widespread failure of systems to provide reliable supplies.

But the approach comes to the heart of conventional politics when there are direct attempts to enforce preferences on sovereign governments. Recently, the South African head of a global environmental NGO warned government that even if it decides to proceed with nuclear power, it would be unable to obtain financing. This bravado should be understood for the blackmail that it is. It is becoming a generic tool, legitimized by environmental agencies. But it is liable to backfire; already the advent of various new financing institutions in the south is causing some panic in environmental circles which suspect that BRICS banks will be less liable to reputational pressure than their western peers.

Conclusion: 'capturing the narrative' but not improving outcomes

The ability to manage and manipulate discourse and to mobilise dissent, often through the crudest untruths, is coming to characterise much of the environmental movement. Indeed, it often seems that they are more concerned with capturing the narrative than achieving societal objectives.

This is unfortunate, because, as some of these examples demonstrate, this focus often undermines their own stated objectives as well as the goals of the wider society.

As serious, they are also undermining the ability of states and nations to evolve those Kuhnian paradigms which may better address societies' technical challenges while opening opportunities to learn more and develop further.

The challenges of the future are complex and require processes of honest and informed discussion and debate. But they also require respect for decisions taken by legitimate authorities, decisions that will inevitably represent compromises.

To the extent that environmental activists seek to be part of the process, they need to contribute honestly and professionally in the technical domain even if they cannot always fully support the outcomes.

If they continue to abuse the process, even if they fail to speak out when they see it abused, they weaken the case for participative democracy and they weaken the strength and quality of the resulting outcomes. That will be bad for them and bad for our society. In the end, the challenge is not to dominate the narrative but to achieve a better world.