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SUSTAINABILITY

THE AGROECOTECH TRAP

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Technology isn't values neutral and treating it as if it is diminishes discussions around innovation and appropriateness any diverts from much needed dialogue around sustainability and sufficiency.

The narrative of the Fourth Industrial Revolution¹, so popular in both government, corporate, and media circles has turned determinedly to food and farming. It's difficult to overemphasise how deeply embedded this is within all aspects of policy. The UK government's Industrial Strategy (now the Build Back Better plan)², it's Innovation Strategy³ are built around it. The NFU's Achieving Net Zero strategy⁴ depends on it. Part 2 ('The Plan') of the National Food Strategy⁵ also had a strong focus on agritech as a sustainability solution.

The narrative is one of 'disruptive' technology at the core of global food systems.⁶ It's not just a single so-called transformative technology but a suite of technologies interdependent on each other, "blurring the lines between the physical, digital and biological worlds"⁷ and employing robotics, genetic engineering

and a bountiful AI harvest of data to better manage animals, plants, and the wider farming environment addressing issues as diverse as low crop yields⁸, poor human nutrition⁹, disease¹⁰ and climate adaptation.¹¹

This is a vision of agriculture¹² where inefficient farmers are replaced with “fermentation farmers, bioengineers, protein engineers, metabolic engineers, cell biologists, computer scientists, IT workers, food scientists and designers, nutritionists, and other similar professions.” It is a vision which insinuates itself through an anodyne mix and match of semi ‘green’ language such as sustainable intensification, climate smart, carbon neutral, nature-based solutions and natural capital and is subsumed in euphemisms like ‘farming 3.0’.

It is in this context that the Soil Association has released its report, *AgroEcoTech: How Can Technology Accelerate a Transition to Agroecology?*¹³

The report considers a comprehensive list of technologies currently claiming to be climate smart and nature friendly including:

- Production technologies; including Smart Agriculture, robotics, genome editing, novel biological controls and inoculants.
- Technologies for impact monitoring; including remote sensing of environmental impact, big data, analysis and environmental footprint accounting.
- Supply chain technologies; including digital food hubs and dynamic food procurement, smart technology for food consumption
- Technology influencing agricultural demand; including cellular agriculture, controlled environment agriculture, bioenergy production

It is good that the Soil Association has given consideration to these technologies. It is not so good that it was written for the organisation by Cumulus Consultants, a land management consultancy with deep connections within Defra.¹⁴

The report is a largely uncritical brochure for technological farming untroubled by any of the principles upon which the UK’s largest organic certification organisation was founded and, de facto endorses the use of these technologies in agroecology and organic farming. As such it has caused consternation and concern about content, context and critique.

A Trojan Horse

In March of last year (2021), the FAO, much feted for its seeming endorsement of agroecology, published its *Strategic Framework 2022-31*.¹⁵ It wasn’t much noticed by the alternative farming movement but it should have been, if only for the existential threat it poses to principled and radical agroecology.

The strategy is heavily focused on biodigital and biogenetic solutions and in highlighting the importance of “innovative technologies” solutions (shorthand for genetic engineering, synthetic biology and related technologies), was explicit in calling agroecology one of the “entry doors to support the development of (these) emerging sectors”.

This vision of techno-agroecology is hard for some to grasp. After all agroecology is a movement for food sovereignty¹⁶ and social justice, it shares kinship with principled organic,¹⁷ a shared or similar vision which is values based and is radical and transformative – not just in agriculture but through farming and food to wider social transformation.

But today's reality is becoming a bewildering state where, for example, a farmer using agrochemicals, or a farmer sending livestock products long distances to be processed, or a farmer using large amounts of bought in compost and a farmer operating a near closed system without agrochemical inputs and selling into local or defined ethical markets can all be called agroecological.

Junk Agroecology is the striking title of a joint report¹⁸ by Friends of the Earth International and others which describes how business-more-or-less-as-usual objectives are being pursued under the guise of agroecology – a new model of “corporate organic” but arguably more invidious and more dangerous because of the way agroecology has become an umbrella under which ‘principled’ approaches to farming (food sovereignty, organic, biodynamic, permaculture etc), sit alongside those concerned solely with limited agronomic applications.

This agroecology is a reductionist menu of agronomic techniques, not defined, not codified in law, that can be picked up or dropped by farmers ad hoc. Its siren song is one of poorly or undefined “elements”, such as the FAOs *10 Elements of Agroecology*¹⁹ that may or may not relate to social justice, equity, care and fairness in the production and supply chains.

The vagueness works for all parties. It allows agroecology to claim wider support than it probably, in reality, has and it is very attractive to government, business, establishment academics and, regrettably, some NGOs because it is relatively easy and cheap policy rhetoric while not being too disruptive to existing structures.

Once you start looking for it you see this stealthy separation from underpinning values everywhere.

A transitional tool?

For example, the much-vaunted IDDRI study *An Agroecological Europe in 2050 Ten Years for Agroecology Modelling*²⁰ specifically sets aside and ignores all aspects of agroecology other than the agronomic features. How credible can its modelling be when technology choices are ignored in productivity scenarios?

There are less egregious and arguably worthy examples of where agronomic techniques are separated from values and principles. Some commentators, in an academic and relatively abstract way, have discussed agroecology, in terms of “transition” and “domains of “transformation”²¹ of overall systems

Some have sought to establish a “transition pathway”²² which envisages “food system transformation” as a series of incremental levels beginning with increased efficiency of input use and reduced use of damaging inputs”, leading to substituting conventional inputs with agroecological alternatives, leading to “redesign agroecology”, which then leads to a totally “new global food system based on participation, localness, fairness and justice”.

This Efficiency-Substitution-Redesign (ESR) framework has been proposed in various forms since at least 1985 and it is argued “captures the progression from shallow agroecological approaches to full system redesign.”²³

But there is often no progression and then system redesign does not happen, fundamental values and principles are not implemented. The mainstream system might be modified somewhat or simply default to greenwashing which thwarts radical technological and system change.

Fudging values

It is folly, for any person or organisation who wants and stands for far-reaching food and farming system change, to see or accept any form of agroecology as mere agronomic techniques devoid of principles and values.

It is also, as Ivan Illich argued nearly 50 years ago in his book *Tools for Conviviality*²⁴, folly to see technology – any technology – as values neutral. Convivial tools, he argued “are those which give each person who uses them the greatest opportunity to enrich the environment with the fruits of his or her vision. Industrial tools deny this possibility to those who use them and they allow their designers to determine the meaning and expectations of others”.

Contrast this with the introduction to the Soil Association’s report which asserts that, “It is clearer than ever from the findings of this research that few technologies are inherently ‘good’ or ‘evil’. It is how they are developed and used that matters.”

This sentiment is shared by the Landworkers’ Alliance in its response to the Soil Association; “Most of the technologies analysed in the report are not intrinsically ‘good’ or ‘bad’”. They too offer the caveat that it’s how technology is used, controlled and who it benefits that matters.

That formidable thinker and economist EF Schumacher, the outstanding former President of the Soil Association dismissed such thinking decades ago; “People still say: it is not the technology: it is the “system”. Maybe a particular “system” gave birth to this technology: but now it stares us in the face that the system we have is the product, the inevitable product, of the technology”.²⁵

In his ground-breaking book *Small is Beautiful*, Schumacher set out his ideas for a “technology with a human face”²⁶ and in doing so argued that technology is far from neutral and values free:

“Strange to say, *technology*, although of course the product of man, *tends to develop by its own laws and principles*, and these are very different from those of human nature or of living nature in general. *Nature* always, so to speak, knows where and when to stop. Greater even than the mystery of natural growth is the *mystery of the natural cessation of growth*. There is measure in all natural things – in their *size, speed, or violence*. As a result, the system of nature, of which man is a part, tends to be *self-balancing, self-adjusting, self-cleansing*. Not so with technology, or perhaps I should say: not so with man dominated by technology and specialisation. Technology recognises no *self-limiting principle* – in terms, for instance, of size, speed, or violence. It therefore does not possess the virtues of being self-balancing, self-adjusting, and self-cleansing. In the subtle system of nature, technology, and in particular the *super-technology* of the modern world, *acts like a foreign body*, and there are now numerous signs of rejection.” [Italics ours, see below]

In his Lean Economy²⁷ analysis, Dr David Fleming, a former Soil Association Chairman and another great thinker and economist, placed technology within the framework of “the reciprocal obligation of common purpose” which is at the core of principled organic and agroecological farming and food systems.

It is notable that the Soil Association’s report contains no references to these pivotal features of the organisation’s history and conceptual foundations.

These are significantly relevant to the modern world and new technologies. Firstly, the practices of alternative agriculture in all parts of the world are related to and in many cases drawn from these concepts and, secondly, the italics in the quote from Schumacher above are all painfully indicative of the discourse of technology today – from proponents as much as opponents – which make them critically relevant.

Scale – the missing element

The authors of AgroEcoTech state that the FAO's *10 Elements of Agroecology* were the criteria used to assess the relationship between the various technologies and agroecology.

How these elements were used as criteria and how they informed the scientific and technical literature selection and reviews that form a significant part of the authors' assessments and "scenario analysis", is unclear.

We do not know all the literature quoted, but we are very aware of the literature relating to GMOs and genome editing in food and farming. The AgroEcoTech report refers only to a narrow selection of papers suggesting, for example, that genetic engineering has been "relatively safe". It does not say relative to what. It suggests that the benefits of these crops "outweigh the costs and have disproportionality favoured poorer farmers" and have played a role in "reducing pesticide and herbicide use".

These are both highly contested statements.

The prominence given to pro-GMO researchers, and to exaggerated and in some cases false claims for the benefits of gene editing technology, can only be a deliberate choice. Extensive literature reviews such as *GMO Myths and Truths*,²⁸ published by GMWatch and analyses of systemic, social and values-based concerns by the Nuffield Council on Bioethics, the researchers at the Science Policy Research Unit at the University of Sussex (SPRU), the Centre for Agroecology, Water and Resilience (CAWR), the Organic Research Centre and to our work in trying to widen the focus of a rapidly evolving debate are ignored or downplayed.

The authors' justification is that "concerns voiced around the systemic risks of these technologies tend to come from those who largely reject them". According to that reasoning, objections voiced by the Soil Association to the use of pesticides and artificial fertilisers should likewise be discounted.

An important factor which is given scant consideration is that of scale.²⁹ For example, the risks related to gene flow associated with one GMO crop in one isolated field is an order of magnitude different from several GMO crops grown over a large area or region. That example is one of biology and ecology. However, the impact of scale and concentration is relevant to many of the technologies covered in this report. Indeed, it is notable that many sections of the report have a dearth of scientific and technical references relating to the challenged area between the so-called "innovation imperative"³⁰ and scale.

This oversight adds further to our misgivings and gives us cause to doubt the veracity and appropriateness of the literature selection in other sections.

Context is everything

It was perhaps inevitable, given the exclusion of values and principles and the fluid framing criteria, that the authors were able to write: "It was clear from early in the project that the technologies themselves do not intrinsically support or restrict agroecology. Even those commonly thought to be contradictory to agroecology could conceivably offer some degree of benefit."

Had the international organic movement's principles and perspectives and the agroecology movement's food sovereignty declaration been used as criteria, few, if any, of these technologies would have been seen as appropriate for agroecology.

Likewise, the system and process of governance. In this report, the authors have used a definition provided by the United Nations Development Programme (UNDP). "The UNDP define governance as the

system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions within and among the state, civil society and private sector.”

Looks and sounds great, if you half close your eyes and ears. But it says nothing about where power lies, where the levers of power and influence are, how – even in an ostensibly incorrupt society – interactions and decisions are rigged so that “mutual understanding, agreement and action” usually favours the elite, the corporate and the status quo.

The Soil Association’s introduction, which could almost have been written for a different report, says: “Different approaches to governance could have very different outcomes, favouring intensive farming or diverse, agroecological farming; consolidating control in the hands of fewer powerful actors or supporting a more equitable food and farming system.”

If governance is not values neutral, why is technology? If governance varies according to principles and world view, why doesn’t technology?

Our work over the last several years suggests that one of the biggest gaps between those who enthusiastically embrace genetic technologies in agriculture and those who are more questioning, is the idea that technology is values neutral. Whilst accepting that societies inevitably evolve and innovate, the technological innovations we embrace don’t arise or exist in a vacuum. They are the product of human thinking and of ideology and they influence how we define problems and frame solutions.

The authors said that their aim was to “review the technology and not the broader social context of agroecology” the reason being that social concerns are “not only related to technology but many larger issues such as economics, labour, land rights, and broader societal issues and policies” which are “intertwined with subjectivity”.³¹

Yet, all of these influence technology selections and choices and therefore production and impact assessments. What the authors call “subjectivity”, others might call values and principles – and of course, the act of exclusion is itself subjective and values driven.

This is a core part of the agroecological food sovereignty movement and why principled agroecology is fundamentally different from junk agroecology. The principled organic movement is less clear, and less upfront, about this but is in the same camp.

There is so much more to say and we recognise that this is not an easy conversation.

It is a shame that the Soil Association did not create a process for further dialogue about the issues raised. There is a real need for these values-based, principled agricultural approaches to be recognised as fundamental to radical change in all aspects of our society and to work out how to deal with new technologies. This report is not on that track. It is a potentially dangerous diversion.

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