

Feeding people is easy: but we have to re-think the world from first principles

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Abstract

Objective: Agriculture designed to make best use of landscape and to be maximally sustainable would also provide food of the highest nutritional and gastronomic standards, and would inevitably employ a great many people. Thus it would solve the world's food problems, and its principal social problem, at a stroke. But agriculture in practice is designed for a quite different purpose – to generate wealth, in the cause of 'economic growth'. The pressing need is not for more science and technology, but to recognise the true cause of the problems and to re-think priorities.

Conclusion: We could all be well fed. Indeed, everyone in the world who is ever likely to be born could be fed to the highest standards of gastronomy as well as of nutrition until humanity itself comes to an end. We already have most of the necessary technique – perhaps all that is needed. We could always do with more excellent science but we need not depend, as we are often told from on high, on the next technological fix. The methods that can provide excellent food would also create a beautiful environment, with plenty of scope for other creatures, and agreeable and stable agrarian economies with satisfying jobs for all.

In reality, in absolute contrast, we have created a world in which almost a billion are chronically undernourished; another billion are horribly overnourished, so that obesity and diabetes are epidemic, and rising; a billion live on less than two dollars a day; and a billion live in urban slums – a figure set to increase and probably at least to double over the next half century; while other species are disappearing so fast that biologists speak of mass extinction.



THE NEW
NUTRITION SCIENCE
PROJECT

Keywords

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Sustainability

Discussion

What might we be doing?

All this raises three obvious questions. First, what might we be doing, that would provide good food and employment, in an agreeable world? Secondly, why aren't we doing it? Thirdly, how do we dig ourselves out of the hole – how do we get from where we are to where we need to be? These questions are addressed here.

Get food right – the production, the eating – and everything else can fall into place. There are no guarantees that it will – but at least the foundations will be there. Get food wrong, and all other endeavours are irretrievably compromised.

Getting food right means three things. First it means good farming – good 'husbandry' that is productive and efficient, is kind to animals, looks after the environment, and creates fine rural societies. Secondly, it means providing food, in sufficient amounts, that is safe and nutritious – meeting the basic task of keeping body and soul together. Thirdly, it means providing food of the kind

that people actually like to eat and which (traditionally) people build their societies around. In short, gastronomic excellence is essential too.

It seems now to be widely accepted that these three requirements – good husbandry, sound nutrition and great gastronomy – are in mutual opposition. Farm policy seems to reflect the belief that if we are kind to animals then we cannot produce enough meat and eggs and milk – which is supposed to justify the factory farm. It reflects the notion, too, that to produce staple crops efficiently (notably cereals) then we must create monocultures of the varieties that yield most heavily, horizon to horizon – even though this is obviously bad for wildlife and annihilates rural societies.

It is also taken to be self-evident that people at large 'demand' more and more meat and milk and dairy produce and so – ostensibly in the cause of satisfying this alleged demand – modern farmers world-wide are urged to produce more and more. Yet it has been clear since the 1970s that too much meat (with its saturated fat) is bad for us. Modern farming is assumed to be good farming (scientists, politicians and corporates like to believe that they are making things better) and so it seems to follow

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If we get food right, everything else we need to do can fall into place. Getting food right means good farming – productive and efficient husbandry that is kind to animals, looks after the environment, and creates fine rural societies. It means providing sufficient safe and nutritious food. It means providing food that people like to eat and which (traditionally) people built their societies around. In short, gastronomic excellence is essential too. So how do we get from where we are now, to where we need to be?

that good farming (as defined in consumerist terms) is also incompatible with sound nutrition.

At the same time, in absolute contrast, nutritionists commonly equate ‘healthy eating’ with austerity, epitomised (or perhaps caricatured) by the lentil bake. Great cooking is conflated with haute cuisine, and haute cuisine is taken to be unhealthy: at best, ‘naughty but nice’.

Husbandry, nutrition and gastronomy go together

Yet the truth is the absolute opposite to what people in high places and authors of earnest tracts seem to believe. In truth, *there is an absolute one-to-one correspondence between good husbandry, sound nutrition and great gastronomy*. The logic is irreducibly simple, and I reckon is incontrovertible, despite the best efforts of governments, corporations and experts of all kinds to argue otherwise. Thus: Wild landscapes and ecosystems are extraordinarily variable but all march to the same logistic drum. At the base of all of them are plants, which invariably outweigh the animals that feed upon them by at least 10 to 1 (in practice nearer to 100 to 1) – for plants are the ‘autotrophs’, that feed themselves by photosynthesising and drawing raw nutrients from the ground. If farming is to be sustainable, then whatever form it takes it must conform to the logistics of biology: a huge output of plants; a much smaller output of livestock. Furthermore, to take best advantage of the caprices of landscape and climate, and to minimise risk of infection (it is intrinsically dangerous to keep too many creatures of the same kind all together), it generally pays to keep the farming as mixed as possible: a wide variety of animals and plants.

Human beings, as omnivores, are able to eat either plants or animals: and in general we thrive best with a balance between the two. Also – as demonstrated by our need for an ever-growing catalogue of vitamins, minerals and ‘nutraceuticals’ – we benefit from maximum variety. Our omnivory makes us intrinsically economical, and is surely one cause of our evolutionary success. If we take the concept of sustainability seriously, then we should be content to eat the things that sustainable farming produces – the same variety of foods that sustainable farms would produce, in the proportions that it produces them. Any other course reduces overall biological efficiency, and hence reduces sustainability. It follows

that the most sustainable diet is *not* vegan, and is not dedicated to lentils (excellent though pulses are). The most sustainable diets of all would contain a high proportion of plants, and a low proportion of animals, and are extremely heterogeneous.

All this is precisely what modern nutritionists advocate: high in fibre and micronutrients; most of the energy from carbohydrate; modest protein; low saturated fat; a variety of unsaturated fats. Furthermore, this is what good cooking is about. Except in the highest latitudes and in deserts, where it is hard or impossible to grow crops, *all* the great cuisines of the world are high in staples (cereals, pulses, tubers); make maximal use of whatever fruits and vegetables are on hand; are sparing in their use of meat (used as garnish, stock or for the occasional feast); and are as various as can be conceived.

When France was at the height of its reputation as the world’s centre of gastronomy, half the diet among the rich as well as the poor was bread – but it was very good bread. In Italy, equally great gastronomically, pasta (as well as bread) was at the core. No cuisine surpasses those of India or China. Both are heavily based in rice or various breads – and both, too, as you discover by going there, serve enormous quantities of local leaves. Traditional Turkish cooks make wondrous feasts from cracked wheat, mint, olive oil, broad beans, walnuts, pistachios and almonds, honey, and whatever beast (typically a goat) that happens to have died recently. (I exaggerate, but not much.)

Haute cuisine can be a nonsense: a gratuitous display of wealth (and cream and cognac). But in essence and at its best, *haute cuisine* merely reflects traditional cooking. I don’t believe it is superior: the very best meals I have had have been traditional *qua* traditional, prepared in far-flung kitchens. Neither should we be too hard on northern cuisines. The Lancashire hot-pot, the traditional Scottish herrings with oatmeal (and haggis and neeps), the Polish *bigos* and even the German *Eisbein mit Sauerkraut und Kartoffeln*, with mustard, are fine cooking, and great nutrition, and entirely and absolutely reflect what the local landscape (and sometimes seascape) most easily produces.

The suppression of traditional cooking

Indeed, when we tease out all its consequences, we see that the greatest tragedy in the modern world is the

Box 1 – The road to darkness*The inexorable pressure of game theory*

Because of the way systems work themselves out – whether computer models or human societies, the world is inevitably dominated by people who expressly seek power. These people may not be innately evil, but their perceived need to stay in control is often at odds with strategies required to enhance overall human well-being.

We have lost our biological roots

Human beings are a biological species. The Earth is our habitat. But modern politics, economics, and prevailing morality have long since lost touch with the underlying biological realities.

The search for algorithms

Human beings seem to have a penchant for once-and-for-all final solutions – which as history has often shown is extremely dangerous. The monetarist,

globalised free market is simply the latest fashionable algorithm, potentially as pernicious as any.

'Agriculture is a business like any other'

This is a particular example of the general search for all-time algorithms, which, among other things, is already wrecking Britain's agriculture.

The economy geared to GDP

Governments measure their own and each others' success by 'economic growth', meaning increase of gross domestic product (GDP). But GDP has nothing directly to do with human well-being.

The corruption of science

Science should be one of the greatest assets of humankind, liberating our minds and (through its high technologies) sparing us from drudgery and enabling us (as Joseph Addison put the matter in a different context) to 'become ourselves'. But it has allowed itself to become the handmaiden of big industry.

suppression of traditional cooking. The suppressors include the modern food industry with all its attendant 'experts', who want to replace traditional craft cooking with their own profitable substitutes; and in Britain at least they include people in charge of education (God help us). For in Britain, people who have no worthwhile concept of morality or of the meaning of 'society', but contrive nonetheless to be 'politically correct', have conscientiously suppressed the teaching of cooking in schools.

Overall, those responsible for the suppression of cooking include governments, the modern corporate-based food industry, and experts of all kinds (including scientists and sociologists). These are the 'leaders' of society. They should all be thoroughly ashamed of themselves. Instead they are triumphalist, weeping crocodile tears over the state of the world, and sublimely unable to recognise (or simply not caring) that the disasters (famine, obesity, diabetes, unemployment, mass extinction, and misery everywhere) are entirely of their own making.

The need for enlightened agriculture

In fact, *the fundamental reason why modern farming fails to feed people well is that it simply is not designed to do so*. Its failure, therefore, is not at all surprising. In my book *So Shall We Reap*, I suggest that farming that is designed to feed people (and to look after the environment, and be kind to animals, and create fine and agreeable rural communities) should be called 'Enlightened Agriculture'.

Why 'enlightened'? The term has several connotations, which to some extent seem in opposition. Thus it alludes to the extreme rationalism of the eighteenth century Enlightenment; and it also has connotations of Buddhist

spiritual wisdom. I think both apply in this context. To want to create agriculture that feeds people seems to me ultimately rational – we must surely reject the modern idea that 'rational' simply means 'most profitable'. But also, the vision of a good world for everybody and all other living creatures strikes obvious spiritual chords.

Enlightened Agriculture in essence is no more nor less than traditional farming – generally mixed (various livestock, various crops), and labour-intensive. It can and should be helped out by modern science (for example, biological pest control or mechanised computer-controlled drop-by-drop doling out of water). But at bottom, Enlightened Agriculture is peasant farming. The term 'peasant' in the Western world is horribly misconstrued. In truth, peasants, properly defined, are the people who know the things that are most worth knowing. Gandhi, who of course was not a Westerner, was prominent among the modern thinkers who recognised this.

In short, feeding people really is easy. To be sure, traditional farming is complicated – there's a lot to it – but over the past 10 000 years, helped out to some extent (though only a limited extent) in recent decades by science, farmers have largely solved most of the problems. Traditional cooks world-wide have abundantly solved the problems of turning what grows into food that people want to eat – food for the gods, indeed. All we have to do is build on the peasant skills that still abound, but are being killed off as quickly as can be arranged.

So why don't we?

Why don't we do the things that need doing?

The world at present is dominated by Western governments (these days run mainly by career politicians),

transnational corporations and experts of all kinds – notably scientists, bankers and professional ‘managers’. Given that they do wield real power, they must largely be held responsible for the world’s present ills, for there should be no power without responsibility. I do not believe that most of these leaders are evil. Some of them undoubtedly are – both selfish and cynical – but most, at least in my experience, are bent on doing good and believe they are doing good. But our ‘leaders’ in general have misconstrued the nature of the problems. Their heads are full of bad ideas. They exemplify Bernard Shaw’s observation, that ‘The road to hell is paved with good intentions’. Box 1 gives some reasons behind their wrong-headedness.

The inexorable pressure of game theory

Game theorists analyse with mathematical precision the ideas that Machiavelli floated at the start of the sixteenth century: how and why it is that some people rise to dominance. In practice (entirely unsurprisingly) power accrues to those who are interested in being in charge. Those who are interested in being in charge pursue policies that leave them in charge. For the cynics among them, power is justification enough. The non-cynics (and there are many) seek to justify their position with the notion that their own leadership is *necessary*. Without it, chaos would prevail. This might sometimes be true. But at least as often, leaders create chaos (including war) in order to justify their own position. (As Bertolt Brecht said, the rich need the poor more than the poor need the rich – but the poor do not realise this; or if they do, they don’t or can’t act upon it.)

We have lost our biological roots

Plato and the prophets alike can be blamed for the idea that human beings are not mere animals; indeed, that as spiritual, intellectual beings, we are hardly animals at all. Modern science has reinforced the notion that human beings can rise above and ‘conquer’ nature: re-design the world simply to make ourselves more comfortable. These conceits are reflected in all aspects of modern life. They are most directly and obviously disastrous in agriculture – for modern farming is increasingly designed to override the realities of landscape or climate, or the physiological realities of animals or plants, or of the world’s ecology as a whole.

If we want farming that is sustainable (and without this we are sunk), then we have to work within the bedrock biological principles. Not just farming, but all economics and politics must take note of, and be firmly rooted in, biological reality. Career politicians like Britain’s Tony Blair make environmental noises to suggest some cognisance of biological reality, but the economic and political drive of Britain and its principal allies continues to flout those realities absolutely.

The search for algorithms

All human beings through all of history have sought simple formulae by which to live their lives, for ever and ever: Christianity; Islam; Marxism. Today’s algorithm is economic: a species of capitalism based on monetarism (everything is deemed to have a price) and the allegedly ‘free’ market that is supposed to operate on a global scale. The whole market is powered by ‘competition’, which is perceived to have some connection with Charles Darwin’s concept of natural selection. The market is set up (in theory) so that anyone at any time may be undercut by anybody else, perhaps working on the opposite side of the world. The whole approach is summarised as ‘neoliberalism’. This, in the nature of algorithms, is applied to all endeavours as the universal solution to all our problems. (Although, incidentally, exceptions have been made under European law for football. Football is show-biz and is taken seriously.)

‘Agriculture is a business like any other’

In farming, the general economic algorithm has been translated into a slogan, a mantra that is perhaps the biggest single cause of all the world’s present disasters. It reads: ‘Agriculture is a business like any other’. In truth, all businesses are different, and what may conceivably work for motor-cars or arms is a disaster for farming and hence for the world, which depends upon farming.

For the mantra translates into the need to produce the maximum profit in the shortest possible time – and anyone who does not, in this maximally competitive world, will lose out to somebody who does. To maximise profit – whatever the business – there are three prime requirements. In the case of farming, all are in absolute opposition to the real needs, or indeed desires, of humanity, and absolutely antipathetic to the general goals of human well-being sustainability.

Requirement number one is to maximise turnover, meaning output. Farmers are exhorted to produce as much as possible – maximise yields on the greatest possible area, venturing well into marginal lands. Inputs must therefore be maximised and wildlands are compromised for no good reason at all (*vide* all those cattle in the Mojave Desert, or the wheat in Greece and Cornwall). The consumers correspondingly are urged to eat more and more (which means, since marketing clearly works, that the epidemic of obesity is inevitable).

The second requirement is to add value. This results in massive gratuitous waste: all that packaging; an endless catalogue of additives, largely untested (at least in their infinite combinations); allegedly ‘fresh’ and certainly out-of-season fruit and vegetables whisked by jumbo jet across the world – maximally polluting, yet subsidised by tax-free aircraft fuel; but above all, meat.

Livestock production is increasing hand over fist and despite some reforms, it is becoming more and more intensive. Some ‘modern’ pig units contain a million pigs.

Received wisdom from on high has it that this is in response to 'public demand', as if we were all out and out carnivores. In truth, meat is produced in greater and greater amounts because this is the ideal way to mop up cereals that would otherwise be in surplus. It removes the ceiling on cereal and pulse production (which would be far too low if human beings ate the cereals and pulses themselves) and turns food that could and should be cheap into food that is maximally expensive.

Modern intensive livestock production is immensely dangerous (in the USA alone tens of thousands of tonnes of antibiotics are used as 'growth promoters', all of which also generates antibiotic-resistant bacteria), and cruel, and polluting. It is also obviously unsustainable. Traditional livestock feed on grass (cattle and sheep) or on leftovers (pigs and poultry). Intensively raised livestock eats staple foods that we could be eating ourselves. By 2050, so the United Nations tells us, there will be 9 billion people on Earth. The world's livestock, at the present rate of increase, will consume enough to feed another 4 billion. Consumption is increasing not because human beings are frustrated lions but because marketing works.

Worst of all: to maximise profit the producer must minimise costs. This in general means simplification, and cheaper inputs, and generally cutting corners. With livestock in particular cut-price husbandry is immensely dangerous. It was the direct and only cause of the epidemics of bovine spongiform encephalopathy (BSE) and foot-and-mouth disease that began in Britain in recent years (and BSE, transformed into Creutzfeldt-Jacob disease, is still killing people).

Britain's farming (and Britain is not alone in this) is run on a wing and a prayer. Britain's much-flaunted Food Standards Agency deals with details, but not with the underlying structure. It evokes the metaphor of deck-chairs, busily re-shuffled on the *Titanic*.

But the main way to cut costs is to cut labour. Thomas Jefferson conceived the emerging United States as 'a nation of small farmers'. So it was, until well into the twentieth century. Now only around 1% of the population of the USA works full time on the land (in the USA, there are more people in prison). Britain is much the same (with fewer in jail, though we're getting there). The mantra has it that labour-intensive farming is just too expensive.

This frantic cutting of labour is held to be 'efficient' – since efficiency is measured only in cash. The biological efficiency is very low indeed, as all the subtleties of husbandry must go by the board. It is also a fake: the USA has always propped up its agriculture with outside labour, first of all African slaves and, when that became illegal, with Mexicans and Puerto Ricans and others who are virtually deprived of rights and so can be deported at will. Britain is now following suit – propping up its threadbare farming with Brazilians, Romanians and Poles (although the Poles often reject what Britain has to offer), who again

have dubious legal status and so are virtually without rights.

Thus has 200 years of social reform been undone at a stroke. Indeed, Britain's whole economy is a fake. It seems to work short-term only because the British as a whole are richer than most of the world, and we so can entice battalions of foreigners to do our dirty work for us, and buy cheap goods from them. We are richer because of our history – for 400 years we had an Empire, and we were on the winning side in World War II and the Cold War. But the imbalance cannot last, even if it was morally acceptable. It is precarious and it is vile. Farming has become part of the vileness.

The world at large is being encouraged by the powers that be – Western governments, corporates and their attendant experts – to follow the Western lead in all things. In the Third World as a whole – which is most of the world – 60% of the people work on the land. In India, this is 600 million people. If India followed the British lead, then at least half a billion people would be out of work. This is far more than the total population of the newly expanded European Union and almost twice the total population of the USA. Yet this is perceived as 'progress'.

Advocates of such 'progress' speak of alternative industries. The alternatives in India are information technology (IT), which employs only tens of thousands – not hundreds of millions – and most of them are graduates. Tourism at best offers employment as taxi drivers (80 hours for £8 in Delhi) or hotel cleaners (bussed in from the suburbs or the slums before dawn). Most disenfranchised farmers and their families finish up in slums. In Africa, prostitution and mercenary soldiering are growth industries. The girls in the bars of Bangkok are the daughters of farmers, and send money home. That's progress.

In truth, the *only* conceivable option for most of humankind for the foreseeable future – which probably means forever – is to remain agrarian. Countries like Britain, which have done their best to destroy traditional, labour-intensive farming, should be building it up again with all possible speed. The present Western conception of 'progress' is a disaster.

The economy geared to GDP

'Progress' is now largely equated with 'economic progress' and that is taken to mean 'growth', which in practice means increase in gross domestic product (GDP). Yet as John Maynard Keynes and others pointed out at least half a century ago, there is no simple correlation between GDP and human well-being. Indeed, the two have very little to do with each other. Demonstrably, as GDP increases the rich can get richer and the poor grow poorer. Demonstrably, too, the methods that increase GDP are precisely those that may compromise human well-being – notably by removing the agrarian base on which most of humanity depends.

The corruption of science

Modern agricultural scientists and their political apologists nurse the conceit that without their endeavours, the world will starve. Of course good science is always useful. Of course agricultural science has been in many ways triumphant. Of course we need it. If we take the long view of history, however (as it has become extremely unfashionable to do), we see that farming is primarily a craft industry that generally succeeded brilliantly for at least 10 000 years before formal science came on board at all. Indeed, agricultural science has succeeded as well as it has only because it had such a firm foundation to build upon. To seek to replace those foundations – and to do so with all possible haste – is hubris indeed.

More generally, science seems to have lost its way. Science should be a guardian of truth – or at least, of particular kinds of truth; and when it is translated into high technologies, it should be the friend of humankind. In reality, again beginning in the 1970s, it has increasingly become the handmaiden of governments and of big business – because big business now pays the scientists' wages. Science, indeed, is now locked in a feedback loop in which corporates pay for research that generates high technologies of the kind (and only of the kind) that will create more wealth for the companies.

We see the shortcomings of this approach most clearly in medicine, where research now focuses on the chronic and often minor ailments of the ageing rich, rather than the life-and-death epidemics of the poor. But we see it too, in abundance, in farming. Small, mixed farms need excellent science too – but the lion's share of modern science is focused on mass production by monoculture. Within the whole sorry scene, particular technologies are compromised too. Thus genetically modified organisms *could* conceivably be of use to small farmers – but in fact are developed to increase the grip of the major biotech companies, and of the countries in which they are based.

In short, most of the effort of science this past 30 years has not been about feeding people. It has been about the transfer of power from millions of small farmers, to a few corporates. Modern farming is not designed to feed people. It is designed to make as much money as possible for increasingly few companies, and to provide a Trojan horse for major political powers whose imperial ambitions are as powerful as ever. Since modern farming is not designed or intended to feed people, it is not surprising that it fails to do so. The idea that everyone can and will be fed when the pile of money is high enough is quite simply ludicrous. But apparently it is what many people in high places believe. Their actions make no sense unless they believe this.

How to get out of the mess

Present strategies, disastrous as they are, spring in the main from ignorance and misconception rather than from evil – although people in high places really should not be

ignorant. To be unknowing is to be negligent. Whatever their source, we need to re-think most of our most fundamental beliefs from first principles. Ideally, humanity at large should do the thinking – this is what 'democracy' implies – but in practice, deep thought is led by intellectuals. Intellectuals by definition are broad thinkers, quite distinct from 'experts'. Experts simplify, and although simplification can be useful, in the end it is always inadequate. But the re-thinking must translate into action. For this we need practical people – farmers, accountants, trades people, and perhaps above all peasants, where 'peasants' are defined properly, as people who know how to do things.

So here is a shortlist of things we need to think about and do, which is summarised in Box 2.

The nature of democracy, and how to make it work

Game theory predicts that most people should be 'doves' – basically peaceable and co-operative: 'nice', in other words. From this it seems to follow that if the will of the people truly prevailed – in fact, if societies were truly democratic – they would work a great deal better than they do. But the dovish majority does not seek power. They leave that to the 'hawks' – who tend to run society according to their own ambitions and desires. Hence the innate contradiction: the doves' own dovishness leads to rule by hawks. But once we recognise this logistic problem, it should not be beyond our wit to find ways to overcome it, and devise systems that really are democratic.

The meaning of 'progress' and 'development'

The concepts of progress and development, high-sounding and important as they are, need to be re-thought in social and psychological terms, rather than as materialist exercises in industrialisation and raising GDP. They should surely be measured in terms of human well-being – personal fulfilment within agreeable and just societies at peace with one another, and in stable environments. Progress and development as currently conceived (in high places) commonly lead to the precise opposite.

A new capitalist economy rooted in the idea of human well-being

New economic models are needed, specifically geared to well-being. Such models are currently being developed and a growing cadre of companies (for example, in renewable energy and IT) are already putting them into practice. The models are essentially capitalist – the old-style centralised, government-controlled economies are surely obsolete. The presently prevailing model of capitalism (monetarist, globalised) is not the only one there is, and indeed is as repellent to many a good Tory or Republican as it is to all kinds of socialist. Thomas Jefferson and James Madison specifically warned against the power of corporates.

Box 2 – The road to enlightenment

The nature of democracy and how to make it work

'Ordinary' people can run their own affairs and most prefer to be agreeable. The prime task, then, to make democracy work, is to ensure that 'ordinary' values and skills prevail.

The meaning of 'progress' and 'development'

'Development' should imply greater human fulfilment – but has become equated with more and more visible, material wealth. 'Progress' has come to mean ostensible technological progression towards that end. Thus the concepts have been debased and dumbed down. They need re-thinking from first (moral) principles.

A new model of capitalism rooted in human well-being
Capitalism can be efficient and is not innately evil. But present models are not geared to overall human well-being. Radical economists world-wide are working on more appropriate models, and in this lies cause for hope.

The absolute importance of craft

Skills developed over many thousands of years, especially in farming and cooking, demonstrably can do all that the world requires. Hope lies in creating conditions in which evolved, traditional skills can develop further (which is the precise opposite of present trends).

The absolute importance of agrarian living

'Development' and 'progress' are taken to be synonymous with urbanisation. Agrarian living is taken to be at best anachronistic. This view is disastrous. The prime task in rich countries as well as poor is to make agrarian economies work.

Science rescued

Ways of financing research are needed to ensure that science operates for humanity and the world as a whole, and not simply for the enrichment of élites. Again, history provides some useful models. Often people did things better in the past.

The absolute importance of cooking

Traditional cooking, rooted in the home, contains the answers to all the world's prime woes: the need for good nutrition, agreeable social life, and autonomy. It needs to be encouraged everywhere.

Grassroots in general, and the World Food Club in particular

A 'World Food Club' is conceived as a consortium of farmers and processors dedicated to good food, and consumers willing and eager to pay for it. Such a club could soon challenge the power of present-day corporates and governments, and in the longer term lead to new approaches to governance of the kind that are desperately needed.

The absolute importance of craft

Agriculture is, fundamentally, a craft industry, and the craft must prevail again, with science relegated to its proper role as helpmeet, and the devices of modern accountancy employed simply to help keep score. Indeed, crafts of all kinds need to be restored to their proper eminence. They are what humanity *does*. To a significant extent, the practice of craft defines the human species. (It is, in Richard Dawkins' expression, our 'extended phenotype'.)

The absolute importance of agrarian living

Only agriculture can employ the vast numbers of people who need employment. Only agriculture can do so sustainably. Indeed, the more labour-intensive agriculture becomes, the more sustainable it can be, since only human beings can operate the intricate systems that are needed to work in accord with the caprices of particular landscapes and climates. (And the pending climate change redoubles the need for farming to be flexible – which requires thinking people to be on the spot. Machines and monocultures are maximally inflexible.)

But since the birth of industrialisation agrarian living has increasingly been denigrated, and now is perceived as the

world's number one problem – as a positive *drag* on 'progress'. Urbanisation has become a prime index of 'development'. Modern policies now being urged on the world at large are rooted in the notion that the fewer people there are on the land, the better. Yet if India, say, emulated the USA, then half a billion people would be unemployed: far more than the total population of the entire newly expanded European Union.

As a matter of urgency we need debates (and computer models, and serious thinking) to get some guidelines on what the proper ratio of agrarian to urban population should be. The 90% agrarianism of Rwanda is probably too high, for the 10% who are not agrarian cannot sustain societies that can aspire to more than simple survival. But the 1% of Britain and the USA is obviously too low, responsible for many social and environmental horrors. As a first guess we might suggest that for the foreseeable future (and probably forever) no country should employ more than 60% of its workforce on the land, *and none less than 20%*. On this assessment, Britain and the USA are at least as badly placed as Rwanda. Rwanda might reasonably reduce its farm labour force by a third. Britain and the USA need to increase theirs about 20-fold.

As things are, life for most farmers and their families world-wide is ridiculously hard, and truly deprived. But agrarian living does not have to be like that. Some rural societies are among the most agreeable of all. There are technologies galore (including those of communication) that can solve the main practical problems. Serious land reform is needed too. Different countries have different ways of disposing of land, and most are flawed and need re-thinking. But the priority is clear: to make agrarian living tolerable, and indeed agreeable and desirable – to raise its status.

Science rescued

Science and scientists have fallen into bad company. They have become the handmaidens of big business – but their calling is higher than that. It is in all our interests to ensure that scientists retain their intellectual freedom, and also develop the kinds of high technologies that truly contribute to human well-being. The policies that prevailed before the economic gear-shift of the 1970s and 1980s were a lot nearer to what is needed than now. Again we see that the answer to many of our problems lies in our own history: that the world has been actively driven off course by bad ideas, precipitately imposed.

The absolute importance of cooking

If people could cook, and if as good cooks they sought out good food, and if consumerism truly works – which neo-liberals claim it does, then cooks could lead the world into greener pastures. What they would demand, millions of farmers world-wide would be happy to produce – and traditional processors too: bakers, brewers, picklers, all the rest.

Grassroots in general, World Food Club in particular

A sea-change is needed – and for this, we cannot look to governments. All the most important developments in the history of the world have been grassroots movements, from the organic farming movement to Christianity and Islam. To set the ball rolling I envisage a World Food Club – a consortium of enlightened farmers, excellent processors and consumers with a true interest in good food. If the consumers agreed to provide the market, the farms and processors would rush to join the party. All producers want is markets, and the means to farm as they know it should be done.

Again, the seeds are already out there: the Slow Food Club, based in Italy; the organic movement; the various campaigns to improve the welfare of farm animals, such as Britain's Compassion in World Farming; the world-wide interest in 'alternative' technologies of all kinds, geared to the true needs of human beings and to long-term sustainability; the economists who are working on new

economic models, and the business people (in energy, telephones, what you will) who are putting them into practice; and the priests and moralists who ask the deepest questions, like what it is that humanity should be trying to achieve and why.

Conclusion

It should be easy, or at least technically fairly straightforward, to feed everyone who is ever liable to be born to a very high standard. We are disastrously failing to do this because of strategies and policies of food production that are not necessarily innately evil, but are based on serious misconceptions and inaccurate analyses.

Deep thinking is needed on all fronts to put things right – economic, moral, political, and in science. But the central requirement is to make true democracy work: to do everything possible to ensure that power lies with the people. There is every reason to suppose that the abilities and basic morality of 'ordinary' people are far superior to the simplifications of 'experts'.

The immediate task is simply to bring all these currents together – all united in the cause of Enlightened Agriculture. That, truly, is the *sine qua non*.

References

- This is an essay rather than a conventional academic paper, and what I say here is influenced in general rather than in particular – hence no citations in the text. Some of the books that have most influenced my thinking are listed below. I also wish to recommend 'fiction' for its insights into 'reality': for instance, Thomas Hardy's *Far from the Madding Crowd* and *The Mayor of Casterbridge*; Aldous Huxley's *Island*; Sinclair Lewis's *Main Street*; Upton Sinclair's *King Coal* and *The Jungle*; John Steinbeck's *The Grapes of Wrath*; and Leo Tolstoy's *Anna Karenina* (viz. Levin's agrarianism). And then, in conventional style:
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