

# Better Than Being Fossilised! <sup>1</sup>

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At first sight the reference book to go to about all matters science fictional (not only in the English-speaking hegemony!) would seem to be *The Encyclopedia of Science Fiction* edited by John Clute and Peter Nicholls. The *Encyclopedia* began in 1979 with 672 pages. The new edition of 1993 has 1,370 pages. By now the *Encyclopedia* is on-line, forever expanding and revising itself, with almost 6 million words and rising; it's free to consult.

As well as entries about individual SF authors, the *Encyclopedia* has nearly 900 comprehensive entries devoted to 'Themes', ranging from 'Adam and Eve' to 'Zoo'. But amongst the many hundreds of themes, there is precisely *one* entry referring to Food.

This may be because the editorial team themselves aren't personally very interested in eating. Supreme editor John Clute recently complained on Facebook, à propos music played in restaurants, that *he* goes to restaurants to *talk*. Or it may be because *science fiction itself* doesn't pay much attention to food.

The food theme which *does* feature in the *Encyclopedia* is "Food Pills". **FOOD PILLS.**

Who started the fashion for future food pills? The answer, if we follow the *Encyclopedia*, ought to be the French chemist Marcelin Berthelot who published an essay in 1894 on "Foods in the Year 2000"<sup>2</sup>, declaring that synthetic food manufacture would completely replace agriculture. This essay appeared in a popular monthly magazine (*McClure's Magazine*) founded in New York the previous year when a World's Fair was taking place in Chicago. Prior to the World's Fair, the American Press Association had been asking notable writers to promote the event with essays. Berthelot was one of the most famous scientists in the world at the time. He had proved that no vital 'life-force' was needed to produce organic sugars and fats and so forth, but simply the same universal laws which also governed inorganic chemistry. There was no mystical magic in meat, despite the pseudo-science *vril* of Bulwer-Lytton (in *The Coming Race*, 1871) which became part of the trade-name for the meat extract Bovril, popular from the 1870s onwards, along with other food extracts of the era.

Berthelot's crusading vision was utopian, of a world without warfare about resources. The young H.G. Wells may have paid attention to Berthelot in a negative way – or else the idea of

food extracts was very much in the air in general. Only five years after Berthelot's essay, Wells published the *dystopian* novella "A Story of the Days to Come", referring to unspecified "pastes and cakes" as the food of the future – which was not a welcome prospect.

Food pills became mixed up with votes for women. Populist agitator Mary Elizabeth Lease predicted in her *Problem of Civilization Solved* of 1895 that by 1993 women would be liberated from slavery in the kitchen because a "small phial" – a "phial" being a little glass bottle – of life force from the heart of corn or wheat would provide enough substance for people for several days. Bye-bye, cooks and cooking! An anti-feminist called Anna Dodd mocked this notion in her *Republic of the Future* of 1887, her narrator declaring, "When the last pie was made into the first pellet, women's true freedom began" (1887: 31).

Returning to the *Encyclopedia*, food "Tablets" turn up in 1915 as the diet of the 40th Century. And in the 1950s Ray Bradbury mentioned that a "matchbox of food pills" for space pioneers would replace the covered wagon filled with real food. By now the idea of food pills had become a mostly satirical cliché, ignored by writers although forever popular with cartoonists.

Food pills won't do as a general diet, because pills can't provide enough calories even if they can supply all necessary vitamins and minerals. What you need as regards miniaturised food is the military food such as that which nuclear submarines carry, according to Joe Haldeman. In an amusing interview in 2012 Haldeman relates that a real-life nuclear submarine carries food for perhaps three months in a very limited space, but you can concentrate and freeze-dry food so much that you can pack an awful lot of food aboard. Distilling a lot of drinkable water to rehydrate your food is no problem if you have a nuclear reactor for power.

On the other hand, according to Kyle Mizokami (2018), a different picture emerges, one of newly-baked bread, and of fresh food only running out after a couple of weeks, yielding in turn, for weeks more, to masses of tinned food crammed into every available space, including under floors.

By now we must give up on the vast *Encyclopedia of Science Fiction* for any guidance. A shame. Is this lack due to the *Encyclopedia* being hosted in England, famous for its native cuisine? Ahem, this is a *joke*, which I do not think is at all accurate nowadays. Millions of Brits watch a regular diet of Masterchef and a dozen other celebrity chef programmes on TV. British cuisine is no longer a contradiction in terms.

However, due to Brexit this *will* become true again. Starving Brexiters will soon be catching pigeons and rats in the streets to barbecue. We have the opportunity to witness the collapse of a modern high-tech Western state into barbarism due to stupidity.

The site [www.technovelgy.com](http://www.technovelgy.com) – "where science meets fiction" – jumps to our assistance with many more sources of food in SF. This site has sieved SF literature – at least the literature written in English from 1933 onwards – like a whale gathering up krill. Much of what is gathered up isn't actually much more significant than krill, namely small fry. Nevertheless, some highlights are...

In January 2014 the newsletter of the major SF & Fantasy publisher Tor.Com<sup>3</sup> hosted a virtual round table featuring six authors, including Aliette De Bodard who also blogs about Vietnamese cuisine, and Fran Wilde who runs the blog "Cooking the Books" interviewing authors who feature

meals in their works of fiction. Heroines, and heroes, of food awareness! Many SF and especially Fantasy writers themselves are personally keen on cooking, to the extent that the "trade union" SFWA, Science Fiction & Fantasy Writers of America, has published a cook book<sup>4</sup> to raise money for its legal fund, edited by the same Fran Wilde in collaboration with the current president of SFWA, Cat Rambo. However, that's a fannish fun book, not concerned with actual future food.

Personally, I would divide future food into two categories. Number one: food to feed would-be colonists of other worlds or of habitats in space. Number two: food to feed the mass of human beings on Planet Earth, which is heading into an era of considerable climate instability, which will have a large impact on agriculture and on the "natural world", too – such as the fish in the seas, in our warming and more acidic seas. Not to mention that sea levels will rise and many major cities will start to flood. Porto is wise to have steep sides. Because of these steep sides, Portugal may rule the oceans once more when Barcelona and Rotterdam and such ports are submerged.

To deal with food in outer space first of all... I am becoming quite sceptical as regards any successful large-scale colonies in space itself, or upon our Moon or on Mars, or on other moons of our solar system. My scepticism is primarily because our human bodies have been finely tuned by evolution upon our own particular world, importantly as regards the *gravity* of Planet Earth. I do not see Moon colonists successfully adapting to *permanent* Moon gravity. Likewise with Mars. Instead, I see medium-to-long term metabolic failure. According to Dr Iggo Magan in 2017, "Brief exposure to weightlessness causes space *adaptation* ... Long-term exposure to the *zero gravity* causes multiple health problems."

Our experience so far of zero gravity is showing up more and more potential micro-problems, and many micro-problems will add up to, well, system failure. I suspect that the same will prove true in the long term for human colonists in Moon gravity at under 17% of Earth's gravity and even Martian, at under 40% of Earth's gravity. Our bodies will not adapt, nor will our children's nor their children's. Defying gravity isn't going to work, no more than defying the speed of light.

According to a 2017 experiment aboard the International Space Station, mammalian cells fully adapt to zero gravity in less than a minute. Real-time readings on the ISS reveal that cells compensate ultra-rapidly for changes in gravitational conditions. Here is a comment by Cora Thiel (University of Zurich) of the team that designed this experiment: "It seems paradoxical. Cells are able to adapt ultra-rapidly to zero gravity. However, they were never exposed to it in the evolution of life on Earth. Therefore, the results raise more questions regarding the robustness of life and its astonishing adaptability."

Can the behaviour of individual cells be scaled up to predict anything meaningful about the behaviour of the whole body (including the brain) consisting of 37 trillion cells?

We so much *want* to be able to expand into space over the millennia to come, so that our eggs are not all in one basket. To me "astonishing robustness" verges on the rhetoric of confirmation bias.

Unfortunately, the main question mark over future food is the likelihood of a future in the sense of some form of organised civilisation. And even as regards our planet remaining hospitable to life, beyond extremophile bacteria. However, let's leave this extreme possibility aside. Probably

Earth will avoid the fate of Venus – namely a runaway greenhouse effect resulting in an average surface temperature of 467 degrees Celsius and a crushing atmosphere 100 times thicker than Earth's, equivalent to us being about a kilometre underwater.

Kim Stanley Robinson is a fine utopian SF writer, as well as being a bit of a secular saint, though a perfectly reasonable saint, not like Mother Theresa for instance. In Stan Robinson's view the only way for a human civilisation to continue realistically is to achieve a realistic utopia by the disappearance of capitalism. Yet how does the transition come about? How does capitalism get replaced? Near-future *Now* we can portray, and we can imagine a future utopia and try to work towards it by taking little measured steps. Yet in between is the mystery of the non-catastrophic transition which time will either reveal to us during the course of events; or not. Possibly Brexit is beneficial in so far as a capitalist economy will start shrinking instead of measuring its state of good health by constant expansion – which is actually an indicator of wreckage as regards our planet.

In his three novels, *Red Mars*, *Green Mars*, and *Blue Mars* – the traffic lights trilogy – Robinson has charted a possible long-term route to 'terraforming', making Mars habitable for human beings just as Mars once was habitable hundreds of millions of years ago. In his more recent novel *Aurora*, Robinson looks at what would be involved realistically in sending a self-sufficient multi-generation spaceship to a very nearby star, assuming that a suitable world is there to colonise. The basic answer is that *we cannot do this* even in an imaginary future of superior engineering and wealth 500 years from now. As regards maintaining a miniature self-sustaining world, with breathable air, drinkable water, healthy food – with self-contained copies of Earth's different ecologies but one trillion times smaller than the Earth's surface – biological systems are very difficult to keep in balance, crops tend to fail, bacteria mutate rapidly. Importantly, Robinson's starship takes 160 years – generations of people on board – to reach almost the *closest* star system to Earth. That is using the fastest travel that *future* Earth can produce, 10 per cent of the speed of light. With current technology the same trip for a big vessel might take 4000 years. A little as if a Pharaoh had launched a pyramid into space. The Earthlike world that Stan Robinson's starship arrives at proves to be fatally unsuitable.

By now we have identified several thousand planets orbiting stars within a couple of hundred light years of Earth, and none seem Earthlike. Nor does our own solar system – where life provenly *did* arise – seem *in the slightest typical* of solar systems. Having complex life arise on Planet Earth is like winning first prize in a lottery twenty times running. Having intelligent, conscious life here is maybe winning the lottery twenty times more. Or fifty times. Or five hundred.

There is no planet B for us, probably not in the whole of our own galaxy, which in any case is out of reach. So, the only reason to imagine *extraterrestrial* food of the future is for entertainment.

I do realistically foresee Chinese asteroid miners sucking hot soup with noodles out of self-heating bags. I sincerely honour these future volunteer worker ants sacrificing their bodies and their lives. They will not mainly mine rare elements as used in mobile phones, but rather masses of water, raw materials for fuel, and possibly way out in the Oort Cloud of comets they will mine for "CHON" food – basic artificial food made from Carbon, Hydrogen, Oxygen, and Nitrogen.

Carbonaceous chondrite asteroids are rich in CHON elements. (The acronym "CHNOPS" adds Phosphorus and Sulphur, vital to life.) These materials will be vital for nourishing human habitations in space, but I strongly suspect that no such habitations will remain viable for more than a century due to "bad gravity." After a while, only robots will colonise space, not biological bodies, and robots do not eat – except in Stanislaw Lem's witty *Cyberiad*.

Therefore, basically all Food of the Future will be eaten on Earth.

One science fiction anthology, published in the UK in 2013, which set out especially to deal with the future of food is called *Looking Landwards*. This came about because of the British Institution of Agricultural Engineers. This organisation was founded in 1938 as a professional forum uniting enthusiastic scientists and engineers involved in farming management and technology. In 1988 the Institution published a book surveying the past 50 years of tractors and things. But for their 75th anniversary the Institution sponsored a science fiction anthology in order to look into the future. This happened because the wife of the Institution's accountant was a member of an SF writers' group which, coincidentally, I myself had founded years earlier, and which gave rise to one of the two leading small press SF publishers in the UK, by now responsible for over 100 books by leading authors. A few established authors were commissioned for *Looking Landwards*, but otherwise anyone known or unknown could submit to be chosen based on style and originality. The Institution paid all the costs of the book, to be regained from sales.

To cut this story short, very few members of the Institution were interested enough to buy a copy of the anthology and the general public seemed uninterested. Thus the book lost a considerable amount of money. When the Chief Executive Officer of the Institution – who had enthusiastically supported the book – departed from his job, the Institution completely lost interest, although *Looking Landwards* is still on sale from the publisher, NewCon Press, and it is worth reading as regards visions of future food, as well as because its stories are well written.

Certain common themes emerge. Such as the automated farm, whether arable or animals, operated by drones and simple robots, with the "farmer" sitting in a control room at the hub. Only when the farm hub crashes is our farmer forced outdoors to try to solve things with his own hands, or at least by using a tractor. On a vast automated farm, it's useful to have genetically engineered ants programmed to carry the harvest back to the silos, grain by grain. Instead of eating the same grain, for instance. Or growing fungi upon the grain inside their nests. After the harvest the ants should drop dead, as fertiliser.

Europe's millions of pigs live closely confined in automated mechanised "Pig Towers" but they experience a virtual reality of nice grassy muddy fields right up until the hour of their programmed euthanasia – a lovely and utopian idea; may we ourselves be so lucky. In this same future China bought all the farms in Australia. Vertical "Pig Towers" are definitely better than sprawling "Farm Cities" surrounded by the vast wastelands which they cause, probably due to the amount of biological waste one needs to get rid of. I believe that in Portuguese "wasteland" = "terra inculta". Personally, I think of devastation and ruin, because of T.S. Eliot's poem *The Waste Land* – not simply of lack of use by human beings. To me, the Italian expression "terra desolata" sounds more like it. Devastated, ruined land. This goes back to Latin *vastus* = de-vast-ated rather

than ‘available for development’. Within the word “wasteland” there is a war between opposite meanings. The ruthless development of the Amazon rainforest will lead to the ruin of that same land, producing a desert, thus reconciling the two conflicting meanings.

“Ecostrphy” – ecological catastrophe – is the new word in fashion in one tale of the future, which very appropriately refers to the time “when things altered beyond our ability to change them back.” *This* is the huge unknown factor regarding future food.

The main crops in a future UK will be soy, “European rice”, and oilseed rape. Rape is the crop which currently turns UK fields a beautiful bright yellow every year, defying the unofficial national anthem *Jerusalem* by the poet William Blake, which refers to “England’s green and pleasant land.” No way nowadays! It’s England’s bright yellow land. I don’t know about here in Portugal but in Spain next door *colza*, oil seed rape, is sold nowhere in shops due to a mass poisoning scandal. A failure to wash out the tanks of transporters which previously carried rape oil intended for industrial, not domestic use, resulted in over 200 deaths. Rape seed oil itself was blamed, never to be seen again on the shelves of shops in Spain. As my plane was coming down towards Porto airport, I saw one solitary bright yellow field, which might (or might not) have been an experimental archive zone of oil seed rape, surrounded by guards in case some escaped.

We’ve mentioned the cartoonists’ cliché, food pills. Those are more pictorial than the reality which arrived, namely food bars.

From Apollo 11 in 1969 onwards, The Pillsbury Company pioneered the “Space Food Sticks” as safe energy snacks for NASA, eatable through a special Velcroed feed port in the helmet of a spacesuit, as well as other cubed and “compressed” foods. These food bars became wildly popular in grocery stores; these and similar ones ultimately became a 5 billion dollar global market. Can we *really* believe it is *pure coincidence* that *Pills-bury* was the name of the family which founded the company which later produced the nearest thing to actual food *pills* for use in space? Yes, it’s a coincidence! The world is full of coincidences rather than conspiracies. That is because our population is much greater in number than the carrying capacity of the planet.

Margaret Atwood’s novel *Oryx and Crake* of 2003 has “chickienobs” – masses of chicken breasts and thighs grown in vats, sprouting as bulbs from a central body which neither feels pain nor even thinks. This is directly in line from the “Chicken Little” in the very insightful science fiction novel *The Space Merchants* of 1953, originally serialised as *Gravy Planet* in 1952, satirising consumerism *a full fifty years* prior to Atwood’s flight of satirical fancy. Thus do snobbish mainstream literary authors typically steal from science fiction while at the same time proclaiming how their own variations upon old themes are special and superior.

Meanwhile, genuine news reports of 2018 say that Memphis Meats – which despite its Elvis Presley name is a Silicon Valley food tech company – has beef, duck, and chicken flesh-masses under development – with investment from a conventional meat giant, Tyson Foods. As of last year, Just, a company based in San Francisco, has a chicken product based on cells originally isolated from the feather of a chicken. (Rather than from a tiny bit of the chicken’s actual flesh; thus eating “Just” nuggets will not really be full-on carnivorousism.)

I am a bit disturbed to learn that the chicken – now allegedly kept in a happy sanctuary in

northern California, is called **Ian**. Ian is a nice clean white chicken with a healthy red comb (= cresta) and wattle (= buche). I have watched a video of the folks on the farm eating nuggets of Ian at an outdoor table, while Ian himself walks around contentedly on the grass beside them. Praise be to Ian, the saviour of our planet! If you don’t believe that Ian will provide protein for our planet, just google right now on your phones: chicken feather Ian.

(I think the real reason for the name “Ian” is that one of the stem cell biologists involved is called Aparna Subramanian. Mr Subramanian is a vegetarian, so he can never eat any nuggets of Ian, even though the nutrients for the ever-expanding mass of chicken flesh all derive from plants!)

Chicken nuggets sound a bit basic to me compared with *Coq au vin*. But if a large future *non-vegetarian* population demand access to meats such as posh parts of the First World currently enjoy, then *all* the meats in the world must come from vats, not from fields, otherwise our planetary ecosystem will collapse. Of course, depending upon preparation, meals of vat-meat and vat-fish can equal ‘real food’ in taste and texture.

Must we say a sad goodbye to complete gastronomy as Rossini would have understood gastronomy? A farewell to fine dining? Must we pronounce an obituary upon haute cuisine? In the necessary transition from all-consuming rapacious capitalism to a relatively utopian society, obviously the privileges of a rich minority must disappear. Wave bye-bye to wagyu beef! Away with actual abalone!

Yet wait! If high technological civilisation continues and is able to sustain sufficiently sophisticated *virtual realities*, then Virtual Reality is where complete Gastronomy, and chefs, will flourish.

Michelin stars will guarantee the validity of the menus, which are not the mere products of programming, the way that machine-made food would be, but of *authentic simulated cookery in real time by real chefs using avatars*, which will require skill and effort, as well as the customers to appreciate this. These virtual restaurants will be fully realised multisensory realities and, since multiple customers can probably each time-share a single avatar if the avatar refreshes rapidly enough, virtual reality restaurant visits and tasting menus will be democratic, inclusionary, and low cost. VR restaurants – pronounced VVRRRestaurants – will include a full range of gourmet vegetarian dishes as well as the forbidden carnivore classics.

As regards those classics, the extinct species of the pre-ecocatastrophe past will be caringly prepared and served – species such as cattle and cod.

There is cause for celebration! Thanks to cuisine, there is existence after extinction. It’s better than just being fossilised.



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## Notes

1. Keynote address for “More Meals To Come”: An International Conference, April 11 — 13 2019 at the University of Porto, Portugal.
2. Dam, Henry J.W. “Foods in the Year 2000 Professor Berthelot’s Theory That Chemistry Will Displace Agriculture *McClure’s Magazine*, September 1894, 303-312.
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