



The Gut Feeling of UK Women on Fracking:

The Science, the Politics,
and the Oil-and-Gas Propaganda

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Averil Macdonald, a “Professor of Science Communication” whom I had not had heard of until a couple of weeks ago, is an academic recruited by the oil-and-gas industry as “Chairwoman of UK Onshore Oil and Gas”, with a large remuneration and an objective to get the UK to change its mind about fracking.

Professor Averil Macdonald shot suddenly to notoriety and the headlines by pointing out that “the facts about fracking” she is choosing to present to the UK are likely to convince men that fracking is safe and desirable, whereas women are likely to react negatively to the same facts, based on “gut instinct”. She attributes this to women’s having a weaker ability to understand science, and that women’s natural maternal instinct for their family is being fed by anti-fracking ‘myths’. Macdonald hopes to help women to become more “comfortable that the myths [sic] they are worried about *are* myths.” (Only **31.5% of women** approve of shale gas exploration in the UK compared to **58% of men**, according to a recent survey of 7000 people conducted by Nottingham University.)

For the past few years, Professor Macdonald and I were doing a similar kind of job, before she got greased up in the filthy lucre of oil-and-gas lobbying. We were communicators of science. It appears that her role (at Reading University) was to communicate science to the general public, whereas I was employed as a “Scientific Technical Writer” (for a life sciences company called “Waters”, in Wilmslow, Cheshire) involved in writing inter-disciplinary science for scientists of various specialisations.

[As the life sciences are now evolving from molecular biology to a more holistic “systems biology”, the field, and revolutionary new technologies in scientific instrumentation, now draw from several sciences, including molecular biology, chemistry, physics and, for sequencing, modelling and analysis, IT and “Big Data”, which together have spawned new sciences, moving on from the traditional molecular biology to a better appreciation of the *systems* of life, such as genomics (now almost ‘old hat’) proteomics, phenomics, microbiomics (including “gut feeling”), all requiring Big Data processing, or “bioinformatics”.]

As many of us know, the oil-and-gas industry, and the governments of nations who most profit from it, have, in recent decades, become notoriously dishonest at **communicating science**. This is because all the real facts, the honest facts, and the real science, including ecology, are going against oil and gas (and coal). For instance, UN reports on oil spills (in the poorest countries and regions, such as Ogoniland and the Niger Delta, once the most biodiverse wetlands on Earth) reveal that huge oil spills with devastating impact on peoples and the environment, are an everyday occurrence. They are not “news”, they simply happen every day. Similarly, the loss of species of life is not “news”, because it happens every day. (Earth has lost half of its species of life in the past 40 years, according to a recent report by the Zoological Society of London.) Our killing of the planet and her biosphere is a scientific fact, but it is not “news”. Death by a billion cuts is not news, and it is not what Professor Averil Macdonald wants to tell us about.

Even in rich nations such as Canada and the USA, where it is harder to hide things and bully the people, huge areas have been permanently poisoned by tar sands extraction of oil. In Alberta, what was once beautiful lake district (and sacred home to Indigenous Canadians) is now death, with black rivers and the huge lakes (or tailings ‘ponds’) where the water and chemicals used to extract oil from sand are dammed in, theoretically permanently, because it is too toxic to ever release back in the environment.

Central to the strategic aims of the US-led West is the appropriation and control of fossil fuels, to which the US, under President Nixon, explicitly tied the nation’s wealth: the so-called “black gold” or the “petrodollar”. Fossil fuels are seen by the none-progressive politicians and economists as the lifeblood

of the global economy. The need for capitalisation of fossil fuels, and the military might to defend the same, is how conventional economists and politicians see that world, and its so-called “geo-political” corporate and political power. (In January 2015, widely reported in the national press, a joint study of academics from the universities of Portsmouth, Warwick and Essex pointed out that intervention in a civil war is 100 times more likely in regions with high oil-and-gas reserves than in regions with none.)

Renewables such as the Sun and the Wind cannot plausibly be owned and ‘capitalised’. And their take-up upsets the whole economic strategy centred on the petrodollar. This is why there is, in some parts of the world, a sustained propaganda campaign against renewable energy.

The oil-and-gas lobby certainly have a battle on their hands to hide the true facts. Oil and gas have become increasingly difficult, dirty and dangerous to extract (as we pass the “Peak Oil” threshold).

Furthermore, the overwhelming consensus of scientists (in all branches) – and statisticians, mathematicians, IT specialists etc – involved in the many fields of study in climate change and its Big Data tell us we must now leave fossil fuels in the ground, and use cleaner and safer alternatives, indeed cheaper alternatives: Wind and Solar are currently by far the cheapest form of creating electrical energy when all **externalities** are factored in (cf. “Wind power is cheapest energy, EU analysis finds”, *The Guardian*, 13 October 2014). And there is a lot of solar energy beating down on Earth. The Sun beating on just 5% of the Thar Desert could supply all of India’s current energy needs, and 10% for India’s future needs. (I learned this from a former client of my professional services, an American investment bank supporting IT, Cleantech and Life Sciences, investing heavily in Cleantech in India.)

[For a period in 2014, Ireland became the first nation to supply over 50% of its national grid with wind power, and Germany supplied over 50% of its grid with solar power. (Following the nuclear accident in Japan in 2011, Germany made a rapid switch from nuclear to solar.) Furthermore, energy storage technology is growing at a pace, causing some technologists to predict that we will switch from central generation, with its huge transmission-line energy losses, to localised energy distribution, all technologies and economic opportunities that the present UK Government and its energy advisors are turning their back on, if not actively opposing.]

All the true and honest scientific facts, and the moral facts, are now working against the fossil-fuel industries. And so these industries must do what the tobacco industry did in the 20th century, which is to seek out and employ scientists who are prepared to work against the scientific consensus, and use intense lobbying (essentially legalised bribery) to persuade governments to go against the true facts and to bypass moral truths. Hence, the tobacco industry, with its scientific spokesmen, marketers and lobbyists, managed to get our politicians, and the law, to insist, right up until 1999, there is no scientifically-proven link between smoking and lung cancer.

My British reader is likely to remember Saatchi and Saatchi’s omnipresent “Silk Cut” cigarette advertising in the 1990s, celebrated by the advertising industry for impact and creativity. Saatchi’s other famous client was the Conservative Party, whose leader, Margaret Thatcher appointed as her ‘Health Minister’ the *Chairman of British American Tobacco*, Kenneth Clarke MP. Similarly, in the Conservative government of our day, there are symbiotic relationships between senior ministers, the media, and the “independent” energy advisors and scientists working for the Government.



Rupert Murdoch @rupertmurdoch

21 Oct

Has Cameron got no idea of effects of ever-rising power charges on masses? Lose election or stop windmill nonsense , start **fracking** now,

Sure enough, David Cameron followed his master’s demands and started personally to lobby for fracking, inviting the Murdoch press to follow and film him.

Now, I should state that I am member of the Green Party (of England and Wales), and I fully endorse my party's position on energy. And so you would expect me to counter the claims of the oil-and-gas lobby, and the scientist they have chosen as cheerleader, Professor Macdonald, who seems to want to get the female approval for fracking from about 30% to the male approval for fracking of about 60%.

Please, dear reader, don't think that Professor Averil Macdonald is some kind of scientific genius, and we in the Green Party are scientifically challenged. It is true that we are more representative of women than the other parties, in terms of leadership and membership. We are, for want of a better word, "feminists", who aspire to gender equality and recognition for women and girls throughout the world. And it is true that our only MP, Caroline Lucas, is a woman, just as our leader, Natalie Bennett, is a woman, and a scientist as it happens, with a diverse CV in the arts and the sciences (including a BSc Hons in Agricultural Science). The Green Party attracts scientists and sustainability advisors from all domains of science, men and women.

Intense oil-and-gas lobbying (and the closely related weapons-industry lobbying) is a reality of our times that must be challenged. This challenge is not coming from deluded 'luddites' who fail to understand what century we are living in. Criticism of the extant oil-and-gas industry comes from caring and compassionate people from all backgrounds, including scientific.

Even the Royal Society, which is usually conveniently apolitical and amoral (and which I have often found to be, disappointingly, a mouthpiece for scientific vested interest, such as GM, and similar Frankenstein monsters) has many contentions with the oil-and-gas lobby, as we can see from an open letter to ExxonMobil on Royal Society website:

"The Royal Society welcomes open debate, underpinned by sound science, on the subject of climate change. In September 2006, the Royal Society wrote to ExxonMobil to express concern that some of its corporate publications were presenting a misleading view of the scientific evidence about climate change and were over-emphasising uncertainties about what we do and don't know. . . . We do have concerns about ExxonMobil's funding of lobby groups that seek to misrepresent the scientific evidence relating to climate change." (Letter from the Royal Society to ExxonMobil, published on the Royal Society website: royalsociety.org)

The Science of Gut Feeling (the "Second Brain")

Professor Macdonald's claim that women, statistically, have been shown to react differently to her 'facts', I can believe. And is true that men are more likely than women to choose a career in science or engineering (although, in my years at the Waters Corporation in Cheshire, more of the PhD scientists I happened to work closely with were women rather than men). And it does seem to me that, indeed, women use a lot of "gut feeling". Yes, it seems to me that women are often are much better at men when it comes to gut feeling.

I suspect that Professor Macdonald, whose scientific training is in physics, has not looked into recent developments in the life sciences, and evidently not the science of gut feeling.

Life scientists are increasingly referring to the "gut", or rather the huge area between the oesophagus and rectum, as the "**second brain**" or more technically, the "enteric nervous system (ENC)", no better summarised than by this article in *New Scientist*, titled "Gut Instincts: The Secrets of your Second Brain": <https://www.newscientist.com/article/mg21628951.900-gut-instincts-the-secrets-of-your-second-brain>

The article (and many scientific papers like it that can be found on the Internet) tell us that the ENC has around 500 million neurons, compared to the brain's 85 million neurons. Like the brain, the lining of our gut has neurotransmitters, dopamine receptors and serotonin. Communication between ENC and brain

is now known to be bi-directional, through the vagus nerve. And so the gut does indeed have a strong influence on our decisions, behaviour and interpretation of 'facts'.

Just as a lesion to the brain causes illness and loss of some faculties, damage to the vagus nerve is known to cause reduced inhibition and fear, and response to stimuli becomes slower and harder to learn (including what musicians and sports people have come to call "muscle memory"). Multi-tasking, seeing the fuller pattern, becomes more difficult if there is a breakdown of information from your gut.

Lobbyists and their "facts".

Just as, in the 20th century, it would have been unwise to accept the health or smoking advice of Kenneth Clark MP, at once Health Minister (despite being obese and having a purple head that looked like it could explode at any minute) and Chairman of British American Tobacco, in the 21st century we must question the motives of scientists who accept a 6 or 7-figure salary from the oil-and-gas lobby to sell its "facts".

In any case, the fracking industry (an American invention with American "intellectual property") is very sparing with its facts (particularly in the UK). It won't tell us exactly what chemicals it wants to use, with water, to stimulate and shock out the reluctant gas beneath our houses, which is kind of constipated in its billion-year-old home in shale rock (essentially solidified prehistoric mud). But following a veritable Frack Fest across the USA, where now some States, counties and cities have banned fracking over health concerns (I will return to the USA experience) some States have compelled the fracking industry to disclose the chemicals being used in the million-plus wells (other States haven't yet done so).

American disclosure tells us that hydrochloric acid is used to dissolve minerals and initiate cracks in the shale rock, but then a veritable cocktail of many chemicals are required such as **biocides** (to kill anything that is living in the water, such as bacteria, because, like all living things, bacteria create acids and other by-products that are corrosive to the metals and seals used in the fracking hardware). Other chemicals include acidity regulators, anti-freezes, thickening agents (gels) to allow water to suspend the sand (which 'jacks' open the fractures and keeps them open), friction reducers, corrosion inhibitors, scale inhibitors, viscosity regulators . . . etc, etc.

Every fracking site has many chemicals introduced, and the ones being disclosed mean nothing to the layman (or even to scientists outside of a narrow specialisation). For instance, if I were to tell you that some of the chemicals disclosed are "Tetrakis Hydroxymethyl-Phosphonium Sulfate" and "Tetramethyl ammonium chloride" and "Sodium Tetraborate" and "Zirconium Complex" . . . etc would you be any the wiser? Would you say, "thanks for presenting the facts; this all sounds fine", as apparently the majority of British men do? Or would your gut reaction make you a bit wary and concerned, as apparently the majority of British women are?

The scientist or politician who tells you that all health concerns about fracking are "scaremongering" and "myths" and that the process is "safe so long as it is properly regulated" is deluded, or lying, and probably doesn't care about taking risks with your family's health.

George Osborne

George "Northern-Powerhouse" Osborne is one of the main champions of fracking. And his father-in-law is Lord Howell, the former energy minister who told the House of Lords that it's fine to "frack in the desolate and empty North". Osborne seems to me to be very alienated from Creation *per se*, and, outside of his tribe, seems to have a contempt for all forms of life and human being.

In 2011, when Gadaffi was planning to take his nation out of the petrodollar, and sell oil-for-gold, Osborne and Cameron, and the French, were initially the main protagonists in what became a Nato plan

to totally destroy the whole nation of Libya (then the richest nation in Africa, and relatively equitable, with a high level of education and healthcare). After the carpet-bombing of the Libyan cities of Misurata and Sirte, 90% of whose casualties were civilians, Unicef and the Red Cross condemned it as the mass murder of children, most of whom, discovered in mass graves, were under 10. (A third of the 9,700 Nato 'strike sorties' were against civilian targets.) Norwegian pilots reported to Norwegian media that the USA ordered them simply to "bomb anything that looks valuable".

And back in 2003, regardless of whether Iraq had "weapons of mass destruction", Osborne told the House of Commons he wanted to go to war with Iraq because he was already "persuaded of the excellent neoconservative case for war".

If I were to ask George Osborne if he thinks there could be any health concerns about introducing the biocide Quaternary Ammonium Chloride, or Tetrakis Hydroxymethyl-Phosphonium Sulfate, into our aquifers, he would most likely say, "how the hell do I know? I've only got a second class degree in modern history. Ask Professor Averil Macdonald, she's a scientist". But of course MacDonald is only a physicist, and we cannot expect her to have any more knowledge of chemistry, bio-chemistry, medical sciences, zoology, biology, ecology or the life sciences than the average man on the street. And no matter what her scientific knowledge, she cannot guarantee that the fracking process will not release naturally-occurring radon gas from shale into our homes: no-one can.

In my experience as a Scientific Technical Writer, and helping scientists with IT and data problems, I have often been surprised at the total ignorance that a scientist in one broad domain, such as "physics", can have for the general knowledge, let alone latest developments, in chemistry, biology, medicine, zoology, ecology etc. One striking example, I worked with a PhD physicist, born in England to Chinese parents, whose first name, translated, means "Little Swallow". And yet, she claimed, in nearly 40 years of life in England, she'd never seen a swallow! When summer arrived, I pointed one out to her.

It is supremely ironic (considering my politics) that the Waters Corporation, one of the world's leading life science corporations (Anglo-American), is based in George Osborne's Cheshire constituency. Indeed, in the summer of 2014 he came to officially open our huge consolidated new premises in Wilmslow (to where we moved from disparate sites around Manchester). He had symbolically 'laid the



foundations' a couple of years before, in pouring rain, by planting a sapling tree in the grounds. He opened his speech by saying, "What a lovely sunny day! The last time I was here it was pissing it down with rain", to which half the company guffawed, whilst the rest of us were insulted by this patronising man's thinking that a swear word between 'friends' would endear us to such an important fellow from the Government. (Yes, Osborne has worked out that we scientists and engineers sometimes swear a lot, but so do politicians, and none of us at Waters would have come to give a speech in the Houses of Parliament

by opening with a "piss" or a "shit" or a "fuck". It's unprofessional and disrespectful.)

Now, I can promise my reader that I know much, much more about science, and energy (and probably history and politics and political philosophy) than George Osborne does. At Waters my role was to analyse and write inter-disciplinary scientific truth, not scientific propaganda. Waters is very involved in healthcare, in which accuracy of information, and interpretations of results from scientific instruments, can be a matter of life and death. (I have worked in marketing as a bids writer and a copywriter, but at Waters my role was purely *technical communications*). As a scientific writer, if anyone were to ask me,

based on what I have investigated, what are the possible long-term health effects on humans or animals (including grazing animals) above the ground, during the years and decades of fracking a 'well', or even after it has been sealed off, I would have to say, "I don't know". None of us does. In terms of health, there can be no empirical evidence for fracking that doesn't come from the experience, on people, of fracking. This is obvious if you think about it. There is, however, worrying evidence coming out of the States of what is happening to the health of people living near fracking wells. It is always very difficult to get *conclusive* answers to the cause of cancers, hormone problems and birth defects. But the statistics and the studies are beginning to worry people.

If anyone were to ask me to investigate, and given an honest answer, to the long term health effects of putting even a *single* toxic chemical, such as, say, the biocide Glutaraldehyde, into our aquifers (let alone a hundred other chemicals) I would have to say, "honestly, the only way science can answer such questions is to actually do it, and see what happens, and see if there are any health effects on our children's generation, and on their children. Fracking cannot be tested on volunteers, or animals in laboratories. The only meaningful test is to actually do it, and then assess the health effects on people and livestock and wildlife actually in the environment." But my gut feeling, my passionate gut feeling, as a Scientific Technical Writer, and as a kind of general practitioner of science (and as a father) is **don't do it**. Morally, I believe fracking is wrong, just as morally I believe GM is wrong. There are too many scientific unknowns, and I believe it is morally wrong to experiment on people in this way. But, I would say, if you do insist on the experiment of fracking in the UK, don't do it up here in the 'desolate' North, do it under the playing fields of Eton and Harrow, and wipe out the next generation of fucking Tories.

Radon

Even without the introduction of hydraulic pressure to force open shale, here in the UK we have historically had a problem with leaks of the natural radioactive gas radon. Radon is a problem in the USA too, and according to the United States Environmental Protection Agency, radon is the second most frequent cause of lung cancer, after smoking tobacco. There are now concerns that fracking is making the problem worse.

A study published in "USA Today" (April 9 2015) opens:

"Levels of cancer-causing radon gas in Pennsylvania homes have increased as the fracking industry has expanded, a new study shows. The study is a preliminary "first look" into a possible connection between fracking and radon, a naturally occurring radioactive gas," says co-author Joan Casey. While the study doesn't conclusively prove that fracking releases radon from the ground, the findings are concerning, says Casey, a researcher at the University of California-Berkeley and University of California-San Francisco."

If you were to ask me to give an honest answer to the question, "will fracking under my home increase the risk of radon entering my home?" I would have to say that I don't know for certain. No-one does yet. It might take another decade before proof is universally conclusive, and accepted by the fracking industry and the government.

New York State

Professor Averil Macdonald tells us that, "Women are always concerned about threats to their family more than men. We are naturally protective of our children. I would similarly be concerned but I read the literature and I feel comfortable that I understand. What I hope is that I can make the women who are concerned comfortable that the myths they are worried about are **myths**."

Myths? Well for one thing, radon is not a myth. It is invisible, but it is very real. New York State has banned fracking, on health grounds, not myths. This is a big deal, because the very technology of

fracking was invented and patented in New York State. New York is the financial heart of the American empire whose economic strategy, as we have discussed, is centred on the petrodollar, and has been since President Nixon broke the dollar off from the 'Gold Standard' (ending the international convertibility of the American dollar to gold), in order to associate the dollar with the 'black gold'. Nixon believed that the USA had the military strength and geo-political clout and propaganda to sit upon most of the world's oil or compel the Arab nations to work with him, and to help overthrow any Arab nation or South American nation that the government of the USA did not approve of. (*Wikileaks* is bringing to light much more data on this process.) Of course, this all went wrong for Nixon in 1973, and the Organization of the Petroleum Exporting Countries (OPEC) in the Middle East and South America decided to do things their own way and proclaimed an oil embargo. Everything turned to chaos (which the USA has never stopped, militaristically, attempting to resolve, introducing evermore chaos).

I digress. But my point here is that New York, the symbolic centre of the petrodollar, and one of the financially richest places on the planet, has not banned fracking on what Professor Macdonald calls irrational "myths". It would be absurd to think this. No; precisely because it is rich, and has many rich people (and celebrity), the people of New York have backed up their gut feeling by commissioning many hundreds of independent scientific reports, rather than trust the oil-and-gas industry scientific reports. I cannot possibly summarise them here, and I suggest my reader looks them up on the Internet.

Blackpool



Tina had to appear on the hustings with George Osborne, at venues in Cheshire. She writes on her blog of her discomfort of having to meet someone who "underneath the puppet of the party was a weak, insecure man."

Tina, whose tireless activism has involved huge personal cost and sacrifices, has become one of Europe's "go to" women for how to lead successful community anti-fracking campaigns.

Look up the anti-fracking "Nanas" on the Internet. Tina has appeared on national and international radio and TV. Wearing distinctive yellow headscarves, the Nanas don't aspire to the high glamour of New York celebrity and fashion (although they do count Dame Vivienne Westwood amongst their ranks), but these ladies are prepared to tough it out, squatting on fields in tents in freezing temperatures, facing up to the police and the bailiffs, and, when the cameras aren't looking, sometimes being brutally assaulted.

I have a friend in Blackpool: Tina Louise Rothery who was the Green Party parliamentary candidate for Tatton, Osborne's constituency, here in Cheshire. She was, literally, woken up to the dangers of fracking by earthquakes that Blackpool experienced during Britain's first exploratory fracking in Blackpool in 2011. She is now a leading member of a group called the "Nanas", who are, as the name implies, mainly women, and invariably grandmothers. They have, to date, helped to stop fracking in the Fylde (West Lancashire) and are supporting campaigns, and advising local groups, invariably women's groups, all around the UK.



The Nanas. These Lancashire Lasses have got guts, and energy, and, against overwhelming power of the Government and the oil-and-gas lobby, they make things happen.

Two sites in the Fylde, near Blackpool, were destined this summer to become the first two fully-commissioned fracking sites in the UK. The UK Government and the fracking lobby, in cahoots with the mainstream media, was doing everything it could to see its first return on several years of huge exploratory costs of fracking in the UK. The odds seem to be stacked in favour of the Conservative Government, which was still celebrating and vaunting Rupert Murdoch's successful campaign to have them 'democratically' elected into power by 24% of the people of the UK. (Murdoch, by the way, has investments in American fracking.)

And thankfully, just days before the councillors of Blackpool had to decide whether or not to approve the fracking, following a *full* recommendation from the planning officers of the British Government to proceed, the US Cavalry appeared on the horizon to help save the day. The Blackpool councillors received a letter, on behalf of 850 concerned elected officials in New York State, warning them to turn down the application to drill, on the grounds of health. This wasn't through political motive, or commercial motive, but was an act of humanity. And perhaps it helped sway the democratic process in Blackpool, which now lives to fight another day.

As a Green, I'm very much against the so-called "special relationship" with the USA, but I must give credit where it is due: Thank you, New York. And, please, vote Dr. Jill Stein for President. (Dr. Jill Stein, Green Party Presidential candidate, was, earlier this year arrested and handcuffed to a chair for eight hours because she claimed her democratic right to join the public "Presidential Debate", which arbitrarily excludes candidates who are not members of the Republicans or Democrats.)

Now, if Professor Averil Macdonald were to go to New York State and announce herself as a scientific expert, to convince the majority of 850 elected officials that "the myths they are worried about are myths", I'd don't think she'd get very far with her 'facts'.

The BBC website reported, on the New York intervention in Blackpool, that, "Martha Robertson, Tompkins County Legislator, said: "After studying the public health impacts of fracking for years, New York State Health Commissioner Dr Zucker was clear that he would not let his family live in a community with fracking. It is possible to stand up to this dirty and dangerous industry and ensure residents' safety."

Now, I'm only guessing, but I suspect that "New York State Health Commissioner, Dr. Zucker" knows more about the health consequences of fracking than Professor Averil Macdonald, whose specialisation is physics, even if she is Chairwoman of UK Onshore Oil and Gas.

Looking up Dr. Howard Zucker's CV on the NY.gov website, it is impressive. He trained in pediatrics at Johns Hopkins Hospital, anesthesiology at the Hospital of the University of Pennsylvania, pediatric critical care medicine/pediatric anesthesiology at The Children's Hospital of Philadelphia, and pediatric cardiology at Children's Hospital Boston/Harvard Medical School. Before joining the state Department of Health in September 2013, Dr. Zucker was a professor of Clinical Anesthesiology at Albert Einstein College of Medicine of Yeshiva University and pediatric cardiac anesthesiologist at Montefiore Medical Center in the Bronx. He was also an adjunct professor at Georgetown University Law School, where he taught biosecurity law. . . . Additionally, Dr. Zucker served as Associate Professor of Clinical Pediatrics and Anesthesiology at Columbia University College of Physicians & Surgeons and pediatric director of the ICU at New York Presbyterian Hospital where he launched the re-structuring of the critical care complex both from a physical environment as well as clinical care delivery standpoint. He has also held academic appointments at Yale University School of Medicine, the National Institutes of Health and as a research affiliate in the Center for Space Research at the Massachusetts Institute of Technology . . . He has been listed in Best Doctors in America as well as Who's Who in the World, and is a member of the Bar of the U.S. Supreme Court.

But hey, if Professor Macdonald thinks her qualification in physics, and recent appointment of Chairwoman of UK Onshore Oil and Gas, makes her qualified to tell one of the "Best Doctors in America" that the "myths you are worried about are myths", who are we to argue?

Whereas Dr. Howard Zucker would "not allow his family to live in a community with fracking", Professor Averil Macdonald tells us that she would be "be happy to have a fracking site at the bottom of my

garden" (in Winchester). This would of course make her present house next-to-worthless.

Noise Pollution, followed by Air and Water and Microbiomic Pollution (and the risk of earthquakes and an explosion)

I don't believe Macdonald. I don't think she would be any less distressed than Dr. Howard Zucker to have a fracking site at the bottom of her garden. No-one could look me in the eye and say he or she would welcome a fracking well at the bottom of his or her garden.

Think about it. Once the roads have been constructed, to allow heavy vehicles, surveys and pre-drilling can take about half a year. Following that, the real drilling begins for several months. Thousands of tons of sand and chemicals, and thousands of gallons of water, are forced at hydraulic pressure to break open the strata of rock (the sound and vibration is similar to that of a pile driver).

If Macdonald were to survive the first year, she perhaps thinks she could then relax, as the gas is extracted for a few years or decades. But no machine is silent, and Macdonald's family will have to get used to a consistent noise level of about 40 decibels if they are 2,000 feet from the well and about 90 decibels at 50 feet (i.e. the bottom of the garden, which would of course be intolerable).

But the noise would be good for Macdonald. It would remind her that gas is highly explosive, and that fracking sites do blow, and kill people. An explosion *is* unlikely, but the risk is there for a whole generation, hanging over her family like the Sword of Damocles. And the noise might help remind her that her family is also suffering air pollution, which studies from the fracking experience in the USA claim to cause an increased risk of cancer, respiratory problems and birth defects. And the nagging noise would remind her that the data from New York tell us that people living near active sites report abnormally high levels of nausea, abdominal pain, nosebleeds, headaches, skin rashes and cancers and psychological stress.

Already, even in frack-free Europe in our times, our children typically cannot breathe without some help from steroids, habitually sprayed into the lungs. Health authorities in Paris and London are particularly worried about air pollution, and the deaths it is causing for young and old alike. Asthma in children is rising at an alarming rate, including severe asthma resulting in emergency hospital admissions or deaths. In almost all parts of the world, sudden and fatal asthma attacks on children have risen in the last few years.

A recent scientific paper titled "Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado" which examined 124,842 births between 1996 and 2009, and found that those who lived closest to the fracking sites have up to 30% increase of birth defects, from air pollution, for mothers living within 10 miles of a fracking well, the defects mentioned include oral cleft, spina bifida, problems affecting valves, artery, heart and hormones, and generally low birth weight:

<http://ehp.niehs.nih.gov/1306722/>

Little wonder that our Mothers, and our Nanas, and our Daughters, have such a strong gut feeling about fracking. And I would encourage the 58% of my own gender, who think that they have got to grips with the scientific facts sufficiently to approve of fracking, to question the facts, and the sources of the facts, and whether they are really as scientifically conversant as they perhaps think they are. And if the health concerns don't move you, think about the how the fracking site in the next field will hit your wallet, when you decide to sell your house. After all only 31.5% of women approve of shale gas exploration, and the oil-and-gas lobby is unlikely to change this with their information, against information from we anti-fracking campaigners. And even most of this 31.5% would be unlikely, I

imagine, to approve of fracking in their 'backyard', or buy a family home within 10 miles of a fracking well.

Ask yourself if you think that Cameron and Osborne and Macdonald, and the shale-gas industry, *actually* care about your family's "aspiration" (or *breathing* in other words).

"A truth that's told with bad intent beats all the lies you can invent."

Auguries of Innocence, William Blake