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Frederick Franck

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First Incogniti Trust Lecture

SANITY, SCIENTISM AND 'SALVATION'

Frederick Franck

The National Association for Science, Technology and Society and the Incogniti Trust created this lectureship on Science, Technology and Religious Values. On January 16, 1993, Frederick Franck presented the first Incogniti Trust Lecture at the 8th National Technological Literacy Conference.

In the flyer of this Technological Literacy Conference, I am described as "artist, sculptor, author," and indeed I am someone who spends his days drawing, painting, sculpting and scribbling books. In other words, someone outfitted with a dominant right brain which may imply a recessive, perhaps somewhat underdeveloped left hemisphere, no doubt an anomaly in this gathering of distinguished left brainers. Let this be my excuse for starting off with this story.

"I was relaxing in my deckchair. We were gliding on a becalmed endless expanse of pale blue ocean. I watched another iceberg approaching, sure it would slide past like the last one. If not, we'd give it a gentle push.

My fellow passengers were playing deck tennis or strolling, squinting through their binoculars at the blinding light reflected on glistening sugar loaves of ice. Smiling stewards offered Delft blue cups of mid-morning broth, steaming in the cold air. Women in mink and nutria leaned against the railing watching the men in cashmere sweaters playing deck tennis.

The sugar loaf, this time, did not float past. An almost inaudible scraping of the hull ... a slight shiver ran through the ship's spine. The strollers stopped wide-eyed, stood as if frozen. The ship started to list almost imperceptibly. Did I hear the band intone: "Nearer My God To Thee?"

Silence. The sea lies motionless. No more trace of the great Ship of Fools. Then I woke up."

Yes, we'd better wake up on our little Spaceship Titanic's collision course with the iceberg of Reality. It is not - as the flyer suggests - a matter of choosing "how we want to live," but choosing whether we intend to survive at all. If so, we'd better be wide awake, change course at once and agree on those values that are mandatory to give human survival its chance.

In the thirties, Einstein wrote: "Cosmic religious feeling is the strongest, noblest incitement to scientific research." There was obviously a shortage of such cosmic feelings for, soon after, the cream of German scientific researchers, including Nobel prize winners like Konrad Korenz - aided and abetted by prominent geneticists, anthropologists and with the philosophical blessings of Heidegger - prepared for that ethnic cleansing of the Teutonic soul which culminated in Auschwitz and Treblinka. Technologists, chemists, physicists, competed in perfecting the technologies of gas chambers, of converting human fatty tissue into toilet soap, and of fine-tuning the V2 missiles that were to rain on London. Meanwhile on our democratic shores of the Atlantic, scientists were pushing their nuclear research, while technologists obediently converted the results into those clever devices that in a
split second turned a few hundred thousand Japanese fellow humans into radioactive ash.

After this macabre triumph of the left brain, Science-Technology could turn its creativity to those peaceful uses of its nuclear expertise which by now have saddled us with numberless megagallons of radioactive waste from which neither science nor technology has found a way to protect society. The jinns are out of the bottle and will dwell among us for centuries to come.

 Forgive me, if quickly in telegram style, I list a few of those relevant platitudes you are all too aware of, but which by now are percolating through to the very grass roots, turning blind faith in salvation by Science-Technology into cynicism and despair.

1. The wholesale destruction of forests - since 1972 a mere 77 million square miles of them - a desertification that expands by 120 million hectares annually, and all this means in terms of maintaining stable climates, soil and water reserves. Meanwhile, biological diversity is being diminished by the extinction of - I forgot how many - species per minute.

2. The shrinking of crop lands, the precipitous erosion and demineralization of top soil for the greater glory of agro-business.

3. The progressing depletion of the ozone layer with a concomitant increase in ultra-violet radiation that - apart from affecting the metabolism of rice, wheat and such staples - causes the exponential increase of skin cancers and cataracts.

4. The still unchecked depletion of irreplaceable resources which it took millions of years to produce.

5. The ongoing toxification of the air, of lakes, rivers and aquifers. And so on and so forth.

I wrote a book "To Be Human Against All Odds" in which I distinguish between what I call a "symbiotic technology" and an "antagonistic technology," still far too elegant terms for what is simply a "sane technology" versus "insane technology" or perhaps a "pro-life" technology (if I may adopt this term) versus a "pro-death" technology.

The insane, pro-death Science-Technology may perhaps be traced back to Monsieur Descartes, the thinker who assumed that he was, just because he thought, and for whom the cosmos was a blob of stupidly whirling dead matter, a huge machinery of which all living things were no more than mechanical spare parts. Descartes, soon canonized as the great prophet of that, only recently unmasked, idol named "Progress," became the patron saint of "Science," or rather of what the pundits of the 19th century called science in their megalomania of fancied omniscience and omnipotence, which in turn begot the nihilistic pseudo-religions of Scientism.

Meanwhile, awesome 20th-century mutations in science occurred. Contemporary physics and biology, far from viewing either the universe or our biosphere as machinery, are, on the contrary, aware of these being intrinsically inter-dependent, inter-related systems, closer to organism than machine. This is the good news. The very bad news is that the insane technologies, clearly lethal to society and indeed to our species are still dominant and legitimized on the grounds of 19th-century positivism in its pathology.

Shall we still have the time and the will to save our sins by developing and imposing those "sane" technologies which can counterbalance the "insane" ones which have created our mess, technologies compatible with the reality of universal interrelatedness that governs the biosphere? Can we still stop poisoning and polluting what even the most expensive and inventive "controls" can't undo? It would imply the gigantic task of converting an economy based on limitless greed, obscene consumerism and in perpetual adoration of its G.N.P. (which ultimately does not measure anything but the distance that still separates our Titanic from its collision with the iceberg of Reality) into an economy compatible with human survival.

It is often assumed that our present insane pro-death technology is simply "out of control." The contrary is true. It is still under tight control of government, military-industrial megacapital and of amoral giant corporations blandly unconcerned with the technology-related illnesses, allergies, cancers, famines they cause. They are as blind to the havoc of chemical, insecticidal, pharmaceutical toxicity and electromagnetic radiation as they are deaf to the noise pollution by engines, appliances, and incessant pandemonium of radio and TV that dehumanize what we call the environment. "Environment" is a term in dire need of radical demystification, for our "environment" is not something out there, something we can objectively "observe" and manipulate. The environment is the very system of which we are integral components. What we call "environment" is contiguous with your and my own flesh and blood and bones and psyche.
If I should have given by now the impression of impeaching technology as such, I overshot the mark by trying to follow the wise counsel of Marguerite Yourcenar, that great French writer who was the first woman elected a member of the Academie Francaise: "One's main responsibility is to overcome the errors, the follies of one's time." Insane Science-Technology is one of the most deadly errors, the most suicidal follies of our time.

For years I was inclined to scoff at the limited blessings of sane technology in my own life, bicycle and telephone, my bifocals, my hearing aid and its off-switch, the little Bic shavers that for a dollar per annum outstripped my $80.00 hair mower, and, above all, my beloved old fountain pen that rivals any word processor. Besides, it is the obedient tool that keeps on drawing what my eye sees: humans and clouds, landscapes and plants, thereby connecting eye, hand and heart as no camera can. Of course, if pressed I did not refuse my stamp of sane technology to cat-scans, MRI's, antibiotics, always aware that they do not begin to compensate for the sins of Science-Technology against the well-being of the population of the world at large.

In the past few years I have been struck by two phenomena. One of these is as depressing as the other is hope giving. The depressing phenomenon is how even sane technologies can go insane. Nothing could be more sane than a technology for feeding one another. But, here too, greed has perverted it to reckless, ruthless technologies like that of the meat industry with the resulting overgrazing, deforestation and pollution of ground water and atmosphere with a mixture of the pesticides, phosphates, nitrogens, methane in manure, not to speak of the massive cruelty to the living creatures involved. In water-poor California, for instance, three times more water is used for beef production than is available for human consumption. A quarter of Central American rainforest has in no time been destroyed for pasture.

In the same few years, however, I have been deeply impressed by many new, highly creative manifestations of Science-Technology which are obviously sane, being directly relevant to our and the earth's fate. Unlike mega-science spectacles as supercolliders and Ligo, the $230 million Laser Interferometer Gravitational-Wave Observatory, they do not cost billions and would be a much more responsible investment in survival. Let me give three random examples of a Science-Technology devoid of mega-science hubris and admirably sane.

As a first example of a project worthy of such responsible investment, I should like to draw your attention to the invaluable pioneering work of biologist John Todd, who I wish were here today to speak about his Center for the Restoration of Waters in Falmouth, Massachusetts. For Dr. Todd is the inventor of those astonishing "living machines" which restore the most polluted water waste and slush by leading it through a series of large vats that contain precisely those plants, molluscs, fish, bacteria etc. which do restore and purify it until potable water results. Todd's batteries of "living machines" are now purifying polluted waters in Massachusetts, Vermont, Rhode Island, Indiana, Maryland and Canada and are doing so at a fraction of the cost of the usual commercial purification processes. As if this were not enough, John Todd is rehabilitating a fifteen acre pond on the grounds of the Harwich, Massachusetts town dump, a cesspool in mortal ecological condition, replete with raw sewage, saturated with coliform bacilli, toluene, benzene and such. Within eighteen months, by means of highly sophisticated systems of oxygenation, not only are fish once more swimming around in Flax pond, but its water has been approved for humans to do the same. It is capable of supporting all life forms in a single organism's habitat. Todd's batteries of "living machines" are now purifying polluted waters in California, New York, Michigan, Kentucky, Tennessee, Louisiana, Arizona, Utah, Colorado, Texas, New Mexico, and, most importantly, its program is now being applied successfully to the demineralized soil of Austrian forests.

A second example of a "sane" technology may yet save the rapidly dying forests of Europe, if not those of the Amazon. It was actually discovered by a German miller, Julius Hense, a hundred years ago but forgotten in the enthusiasm for the magic of chemical fertilizers then being developed, long before their deleterious side effects were known. Hensel happened to sprinkle a mixture of crushed rock and grain (stone-meal) over the soil of his garden and was struck by the extraordinarily healthy, pest free, fruits and vegetables that resulted. Hensel's findings were corroborated when, in Tirol, a few years ago, a truck loaded with crushed rock for the resurfacing of a road flipped over and spilled its contents on the floor of a forest of dying trees. It came as a surprise that after the accident the trees began to show signs of recovery and started to grow again. The "stone-meal" technology is now being applied successfully to the demineralized soil of Austrian forests.

My third example of a triumph of sane over insane Science-Technology can be observed closer to home and
in the most metropolitan of urban settings.\(^3\) It is the admirable restoration in downtown New York of two large old buildings, saved from demolition to become the headquarters of the Audubon Society and the Natural Resources Defense Council. The Audubon project, the 19th-century Schermerhorn mansion at 700 Broadway, and the N.R.D.C. building on West 20th street have been transmuted into "model environments." It is a remarkable experiment in preserving cultural assets that are routinely demolished to be replaced by the glass eyesores by now known as "sick-buildings," as they produce illness and psychological stress in those condemned to work day after day in these sealed, artificially ventilated, overheated or overcooled aquariums. According to the Environmental Protection Agency, the cost of the "sick-building syndrome" amounts to billions of dollars in worker absenteeism and reduced productivity.\(^3\)

The task of turning both these terminal cases into livable structures that may serve for another century, was entrusted to the Croston Collaborative, an architectural firm specializing in ecologically responsible design. Tens of millions of dollars were saved by reconditioning these landmarks instead of demolishing them and starting from scratch. "Sane" technology here proves its mettle: energy is conserved by sandwiching a transparent Heat Mirror between panes of glass which keep out the sun's heat in summer and retain interior heat in winter. Triple insulation in walls and roof radically reduce the cost of heating and air-conditioning. Gas powered heating and cooling systems emit 60% less carbon dioxide and monoxide responsible for the greenhouse effect. High speed airflow systems prevent the building up of moisture in airducts, that makes them into breeding grounds for pathogenic bacteria and fungi. Homosote, made of recycled newsprint, replaces plywood which emanates toxic formaldehyde. Wasteful lighting is eliminated by sensor-controlled task-lighting, and as a most ambitious response to ecological requirements, an internal recycling system processes 80% of the daily accumulated waste by using a system of chutes that convey respectively food waste, composted for use in potted instead of plastic plants - esthetics are not forgotten! - and a terrace garden on the roof. The chutes transfer paper, glass, plastic, metal and hazardous waste to the recycling center in the sub-basement. In short, right in the mist of New York's heart of darkness, the light is dawning!

"Science," according to Karl Jaspers, "may fail in the face of the ultimate questions." Here, however, for once Science-Technology proves that it does not have to fail, our survival as humans is surely one of the ultimate questions. For once the limited physical and psychological parameters of human life are taken into account: temperature, atmospheric pressure, moisture and such. Here technologists, architects and scientists did not shirk the ultimate questions: "Who are we? What is it to be human?" "Man is always on the point of not being human," Ortega y Gasset reminds us. With respect for tradition, contemporary know-how and materials are put to work in these three projects as if in response to both pronouncements by the Oracle of Delphi: "Know thyself" (sometimes the oracle seems to have placed the accent on "know," at other times on "self") and "nothing too much" which may be translated as "too much is as dehumanizing as too little."

As I write this down it dawns on me that as in all three examples quoted, sane science and sane technology have a distinctly human face!

Hence, by way of epilogue, allow me to refer again to my book "To Be Human Against All Odds" in which I capsulate the result of thirty years of research on the evolution of the human brain by Paul D. MacLean, M.D., Chief of the Laboratory of Brain Evolution at the National Institutes of Mental Health. It culminates in the description of the human brain as a Triune Brain, a trinity of brains, in which the reptilian and mammalian components survive and continue to function fully in our contemporary skulls. Without going into detail, according to MacLean it is the most recent outcropping of our brain, the prefrontal cortex, which endows us with the following specifically human capacities: (1) to be aware of our own life process, an awareness no other animal has; (2) it is this introspection that enables us to identify with the life process of other living beings, which (3) heralds the birth of empathy. From empathy to compassion is but a step. Foresight, as a first inkling of causality, is another one of the capabilities of our prefrontal cortex. Behavior which is specifically, exclusively human, therefore, is that behavior in which the genetically encoded potentials of the prefrontal cortex - empathy, compassion, foresight - are in control of the equally genetically encoded - much more ancient - reptilian impulse which survive in us, whether Democrats or Republicans, from 150 million years ago. McLean stresses that the empathic circuits do not mature until after puberty and even then only provided they are stimulated at critical stages of development.

I can't help feeling that what happens when humans regress to primeval mammalian and reptilian behavior...
levels is that they do not merely tumble into beastliness but into some sub-animal, sub-reptilian barbarity, for which I know no other word than demonic. Where this sub-reptile, this demonic being, is outfitted with the tools provided by pro-death technology, you may find yourself in automatic crossfire whether you happen to be in Sarajevo, Mogadishu or the Bronx.

To sum up. When we speak of human values we refer to those values closely connected with the prefrontal functions: in-sight, empathy, compassion, foresight. Ninety percent of all species that once existed on earth are extinct. If we intend to remain among the surviving 10% for a while, we need those maximally sane technologies in which our specific humanness overcomes our still reptilian atavisms. Sane Science-Technology is that healthy STS in which the specifically human capabilities of the prefrontal cortex are in control of animalistic egotism and narcissism. They are closely intertwined with human experience and both responsive and responsible to the human condition.

References

Frederick Franck, who has doctorates in medicine, dentistry and fine arts is an artist, sculptor, author. He resides in Pacem in Terris, 96 Covered Bridge Road, Warwick, NY 10990.