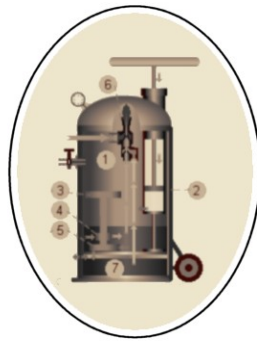


Inspiration

The Reversalists' Answer to the Auto-Dissectionist



by Charles Kurtz

Author's Note

Of course this story owes its life to Ted Chiang's fine work 'Exhalation', which retold the story of Lord Kelvin's 19th Century theory of Universal Entropy. His free work should be read first as this one takes place in his universe:
(www.nightshadebooks.com/Downloads/Exhalation - Ted Chiang.html)

While a great admirer of Lord Kelvin, Nikola Tesla believed in an undying gaseous aether based dynamic universe whose very nature denies the possibility of Lord Kelvin's concept or even that of closed systems in general. Tesla's Universe offers the promise of unlimited amounts of energy once we are capable of conceiving the methods to draw upon this very 'Wheelwork of the Universe'.

The concept used in this story of initially adapting the process of liquefying air to extract energy from the surrounding medium is based on Tesla's description of his first attempt to devise such a 'self acting' system in the early 1890s. The first device of five he identified as necessary for his system, and referenced in this story, was the remarkable, but little remembered, Mechanical Oscillator. It is arguably the most efficient fluid piston engine ever developed. Tesla's efforts along this line were abruptly ended along with much other work, by the devastating fire which destroyed his workshop in 1895. When commenting on this project years later he inferred that while the basic concept was valid he had determined since that it would have had limited commercial success, which here is attributed to its inherent complexity. It might be of interest to readers to know that for at least two decades there have existed huge liquid air plants in Europe that serve as electrical backup power generating stations.

The integration of a venturi jet injector (the term is used here in its generic sense due to its descriptive value) with a Mechanical Oscillator driven pump, all of which is set inside an insulated pressure tank, is presented here simply as a reasonable working concept based on what went on before, together with Tesla's known expertise in fluid dynamics including using venturi jet injectors to create vacuums. (For a more detailed explanation visit: <http://www.energyscienceforum.com/showthread.php?t=1650>). There are other possible, probably more elegant designs, hints of which tantalize due to their obscurity or the possibility that they exist unseen in plain sight as do other magical devices such as modern commercial venturi jet injectors with entrainment ratios approximating 70:1.

Inspiration

The universe of shapes and forms generated by flows be they of air, liquids, or even more coarse matter such as sand, rocks, or people has always fascinated me. The Infinite seems to beckon from the movement of thousands of millions of seemingly individual parts spinning off on their own, which then some how meld together into orchestrated interconnected patterns within the All. Flows are really everyday expressions of Magic.

On the other hand consider the opposite of a flowing stream such as a placid pool of undisturbed liquid sitting quietly with no apparent motion - nothing of interest there, right? Don't be fooled, this bland exterior is a devious deceit - for this is the true outward face of Chaos. Let me explain. Behind that calm unruffled facade exists billions of seething molecules constantly, unceasingly contending with one another in what seems to be an unstoppable rush to an imminent explosion of violence but which overall becomes a nullity as the billions upon billions of individual collisions cancel each other leaving the liquid mass apparently enervated and quiescent while the random violence within rages on unabated.

While flows and non-flowing bodies of fluids are equally active, when looking at internal dynamics traditional science promotes a mis-perception by switching perspectives when attempting to describe the differences. Flows are properly described in terms of the kinetic energy of their internal constituents. However, when discussing the so called static bodies the internal activity is suddenly packaged as a vague potential for movement of the whole mass. Thus leaving an impression that somehow all that internal kinetic energy is now gone, when in fact it is present and active as ever. Because it is impossible to completely block the background thermal energy of the universe it is impossible to ever stop all internal movement of the particles making up a mass. Therefore, in reality nothing is static except in regards to temporary relative positions.

The true difference which needs to be considered is not the artificial one between kinetic and potential energy, it is the fundamental one of order vs chaos. Flows impose order on the particles making up a mass by giving them direction which gives Purpose. A Higher Purpose it might be said, for Purpose gives that most exalted gift of the All: Hope.

And just how would something as insignificant as a rivulet of condensation flowing down a leaf accomplish such an exalted thing? Consider the moment before the rivulet's birth, when it existed only as a 'potential' held within the individual droplets of condensation kept in isolation by the armor of their surface tension. Within each drop is the random chaos of mutual individual insanity. Until.. until finally one drop grows large enough to break its armored bindings, then instantly the individual flailing efforts of the uncountable molecules join together in an organized flow, which encountering another drop creates a greater joining, a surging downward faster and faster with each new joining, until together they form a united stream bending the leaf downward launching them joyously outward to fall and unite with a thousand million other former droplets rushing down stream in first a brook, then a tributary joining others forming a mighty river wending its way across a continent to a vast ocean all the while sculpting the land, creating canyons, spawning a million rainbow hued waterfalls, recharging aquifers, depositing life giving silt, engendering vast swamps and deltas for life, the most precious of patterns of the All, to flourish in.

Flows are real life Magic, their very essence proclaiming the truth that in harmony the whole becomes greater than its parts. Some may say that devastating floods and the accompanying horrendous loss of life demonstrates the opposite of Hope, that of death and despair. This is not true as death is not the end of the dance, it is merely the interface, the transition from one pattern to another where we are each Renewed once again as we continue in our progression of Enlightenment and Development. The All has no beginning, it has no end, for it is a journey, a journey of development and unbounded Hope open to all of us. We merely have to be willing to participate. To show this is true I'll tell you a story - a true story.

Some time ago a great feeling of unease and even despair swept through our people for it was said by a great scientist, the Auto-Dissectionist, that it had been discovered that our world was dying. They were not sure how long it would take but it was unquestioned that the pressurized air from the filling stations which gives us life and movement was equalizing with our atmosphere and there was nothing that could be done to stop it. In truth I paid little attention to the news as scientists tend to be staid overly serious types who often times are so narrowly focused on their own interests that they lose touch with reality.

Plus, as an aspiring kinetic artist I was deeply involved with learning all I could about a new spectacular development in nozzle designs that allowed for nearly unbelievable results. Always before if we wanted to combine different fluids into an air or water sculpture we had to use a separate nozzle for each. But now the new nozzle allowed us to not only combine different colors of the same fluid, but to combine different fluids, even gases with liquids into a single stream. The potential for new patterns and displays of the All was simply mind boggling and I was in a high tension state testing new designs and sharing information with other artists excited over this new discovery.

You can imagine then my feelings when readying everything for the first public showing at one of the major filling stations I was approached by representatives of the community and told that due to new pressure equalization conservation measures non-essential air usages would not be allowed. I was flabbergasted, for I had been so narrowly focused on my own activities that I had completely lost touch with what was going on in the world. My appeal to be allowed just this one demonstration was met with understanding but not yielding. Eventually I dismantled the equipment and took it back to the workshop.

The next day I went to the community hall where not only were my requests again met with refusal, but I was informed that the Conservation plan included implementing a filling station Priority scheme. People were to be classified as to their importance in the scheme of things in solving the unsolvable problem of pressure equalization and as an Artist, my importance was nil so when the plan went into effect I would be limited to two lung refills per day - just enough to maintain survival.

My pleas to be allowed to continue to work on the new nozzle design were laughed off and their science adviser told me that if it were such a magical device then all I had to do was use it to build a compressor that would re-compress the atmosphere using the pressure of the atmosphere itself, and then I could do as many shows as I wished. Their laughter followed me as I left the community hall vowing in my rage to do just that.

Not knowing when the Conservation plan would be put into effect I rushed home and began scrounging all the pressure tanks I could. Over the next few days I went from one filling station to another until all the tanks I had managed to obtain were filled and stored in my workshop. I even became paranoid enough to construct false walls of shelving and storage bins behind which I hid them. Then I began reviewing all I knew about

compressors and examining the few standard ones I had. After a few sleepless days and nights I was nearly in despair for as the Auto-Dissectionist had said, there was nothing that indicated air could be compressed without a greater expenditure of pressurized air to run the compressors.

It seemed hopeless until I remembered watching a demonstration of patterns in swirling clouds of frozen air under double layered domes of glass separated by an insulating vacuum. Suddenly my mind was in a frenzy as I tried to remember the density of frozen air compared to atmospheric air, while trying to recall the process involved in attaining such a level of refrigeration. For it had dawned on me that it might be possible to use the vast volumetric differences between atmospheric air in its gaseous state and that of liquid air to run, for lack of a better word, an atmospheric engine. It would be driven by the pressure of the atmospheric air as it tried to push through to the low pressure zone where liquid air lay with only a feeble means of pushing back. And then of course it could work in reverse as the cold liquid air could be exposed in a heat exchanger to warm incoming air causing the cold liquid to vaporize and in turn drive other engines as the massive increase in volume and pressure forced it back to the outside! I nearly tripped my overload circuits as the epiphany exploded inside the gold foils of my cognitive apparatus.

My days and nights became a ceaseless quest of perfecting the previous refrigerating process that had not of course been concerned with over all efficiencies nor of using frozen air as a means of extracting power from the ambient medium. Success seemed to follow success especially when a friend acquainted me with a new reciprocating fluid driven engine design that nearly eliminated all extraneous losses. It not only did away with independent valves and gears including crank shafts and load bearings, but there was only one moving component which included the primary double acting power piston which also performed the valving functions. Compressors sized to conform to whatever compression ratios were desired could be added in series as modular components on the common shaft. It seemed a gift from the All, given to ensure that nothing could hold me back from achieving my quest.

Now, looking back upon that time, it is difficult to remember it clearly, as if having been touched by the All I succumbed first to the madness of exhilaration and then nearly to that of despair. For in spite of the clarity of the vision that had touched my soul, and in spite of the perfection of the equipment, it wasn't meant to be. For although on occasion it was possible

to extract surplus energy it could not be maintained long enough to recoup the initial energy used to set up and prime the system. The assemblage of equipment required to deal with achieving temperatures so low they were difficult to comprehend, was just too cumbersome to transformation into the elegant simplistic design required. With the realization that my quest had failed came a despair that nearly drove me into shut down.

And then came the official implementation of the Conservation plan with guards stationed at each filling station. There I had to present the ID labeling me as a non-essential worker restricted to two lungs a day along with the ration book from which the guard tore off parts of my soul along with the coupons. I was questioned if I had any extra lungs at my home and told that more than two backup lungs was hoarding and was against the law now. My free flowing society had turned into a mindless stagnant pond. Dispirited I wandered aimlessly all that day until, finally finding myself at home after dark, I backed into a corner and went into standby mode until the next day.

This sequence went on for days until finally in an attempt to calm myself and save my sanity I turned on one of the first proof of concept air sculptures using the revolutionary nozzle design. It had a small compressor that supplied the motive air to a small nozzle which was aligned with another somewhat larger nozzle. They were vertically mounted and surrounded by three primary color smoke generator outlets pointed at the junction of the two nozzles. When the motive nozzle was in operation the high pressure air would accelerate through it and shoot up into the mixing throat of the larger nozzle as a compact high velocity spinning jet stream. Because the air in the stream was going too fast to be able to push to the sides as hard as the ambient air surrounding it the ambient air would push in getting caught up in the flow drawing in more ambient air and smoke. Spinning through the larger nozzle all the entrained air and smoke would get thoroughly mixed up together with and pressurized by the motive air before shooting out in a high speed colored stream that eventually slowed in its ascent, spreading out in a colorful ever changing drifting cloud. By controlling the output of the smoke generators this simple air fountain was capable of displaying surprisingly complex variations of colors and patterns.

While resting there watching the color show a small thought started nagging the back of my mind, about how when we first started playing with these combined jet nozzles how surprised we were at the amount of ambient air that could get caught up in the motive stream. Various designs commonly achieved a ratio of 20:1 of ambient air to pressurized air, and some of the

more proficient machinists claimed much higher ratios stating that it was primarily a matter of smoothing surfaces and conforming curves to match the flow properties of the fluids being used. And while this particular design used an open junction others enclosed the junction, feeding the suction fluids to the resulting chamber through valved pipes. Some of these chambered jet nozzles were able to achieve surprisingly high vacuums.

Suddenly the obvious occurred to me that there was no difference between a lower pressure zone formed by cold and that formed by pumps or motive jets. And while piston pumps were constrained by specific displacement volumes, motive jets were not.

With this realization my mind started to race, my depression disappearing in a tumble of thoughts on using the compound jet nozzles to create lower pressure zones to bring in greater volumes of ambient air. But how to perform the actual compression if the reciprocating engine compressor system was used to power the motive jet?

Then I remembered reports about a lung exploding while being filled from a very high pressure tank even though the feed pressure regulator had been working properly and the lung tank had been checked for flaws. The consensus was that the extreme speed of the refill had compressed the residual air in the lung tank so quickly that an extreme build-up of the heat of compression had triggered a catastrophic pressure event. There were two primary lessons to be learned from this: one, that the heat of compression needed to be conserved to ensure maximum efficiency; and two, it wasn't necessary to use mechanical compression since a compressed fluid was perfectly capable of compressing lower pressure fluids whenever they came to call inside the pressure tank - it was just a matter of getting them to call and the compound jet nozzle was perfectly suited to arranging that.

And that is pretty much the story of how the Inspiration compressor lung came to be. There was one minor anxiety attack when my first pneumatic model failed to function but after calming myself I realized my mistake and switched to an incompressible liquid motive jet design and that was that.

Hind sight as they say is five by five and knowing what we know now the design is obvious, as some scientists take great pleasure in pointing out to me. The reciprocating engine pump along with the compound jet injector is set *inside* the hydraulic liquid in the pressure tank which is primed to two atmospheres or so. When it is switched on this internal pressure drives the

oscillating engine while passing through it to exit ports leading out to an external non-pressurized reservoir. The engine shaft drives the pump which draws in the pressurized liquid surrounding it and then boosts the pressure significantly, sending it along to the motive jet nozzle which creates the lower pressure zone into which the replacement fluid from the reservoir, along with new ambient air, flow in at a combined ratio of suction fluid to motive fluid of 5:1 or greater. Everything is then thoroughly mixed and compressed together in the larger nozzle's combining throat before being shot out as a powerful spray into the main pressure chamber. The double walled vacuum flask insulation tank design captures the heat of compression boosting compression efficiency significantly.

My moment of triumph came when the enforcement arm of the Conservation committee came to shut down my show in the main filling station and I demonstrated to them how I could fill any empty lung brought to me with out recourse to anything other than the very air surrounding us and a small independent portable Inspiration compressor prototype. The ever increasing erratic pulsation of the committee's science adviser's left eye diaphragm during this demonstration was worth all the sleepless nights and despair endured. Once the plans were made available others more competent than I devised designs meeting industrial and safety standards and factories are busy at work turning out the modified lungs so no one needs to use the filling stations anymore, we can all just breath the free air around us - forever. The scientific types are deep in plans for pumping some of the atmosphere back into the caverns but most people are content to leave things be.

An unexpected surprise was having the Auto-Dissectionist introduce himself a few days ago at one of my shows. He told me that if I hadn't been such a damn fool know nothing artist I would have known I couldn't do such a thing. Then he winked at me and said 'God bless all damn fools' and rolled off with a bright yellow helium balloon Happy Face bobbing along above him.

Now, once again I am a contented member of a free flowing society. My people were saved from the brutal mindless fate that loomed over us not by any special attributes some try to attach to me, but rather by the preternatural benevolence of the undying All which encourages us to never relinquish Hope.

The Auto-Dissectionist's admonishment to rejoice in existence is good advice. Hopefully this continuation to his story demonstrates that all we have ever learned and achieved as individuals or as a people is never lost. Rather

while cultures and individuals end, upon Renewal all the positive developments we have attained are still contained within us to be passed on in the next dance pattern and so on to the whole of the All. In this manner our growth, and the growth of the All itself is never ending, and united together in Hope we can truly become greater than our individual parts creating a Universe of wondrous Magic.

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'Hey, Bill, you gotta see this. We've got overall increased activity, with a steeply degraded intake volume and a lowering ambient pressure in zone 9.'

'You mean the 3CP0s have done it?'

'Looks like.'

'I'll be damned!'

- END -