

# An Anthroposophical Centre of a Different Kind

by Paul Emberson

**O**n the road to the Solway coast, in Dumfries, Scotland, just before you reach the sea, turn off into a leafy lane with a stream running close by it. The lane will take you into a broad valley with high ridges of hills on either side. Fields of cattle and stands of mature deciduous trees line your way. You are entering an area of deep peace, shielded by the hills from the radiation broadcast by phone masts and the like. After a couple of miles or so, you turn off the lane, over an old, stone, humped-backed bridge straddling the stream. You find yourself in front of the wrought-iron gates of a quiet estate in the heart of this beautiful "white zone" [microwave-radiation-free zone]. Beyond the gates, a drive leads you through the long branchy archway of an alley of tall conifers, before it comes into the open and sweeps round in a great curve, between lawns and flowering trees, to bring you to the door of a stately house built of light-grey granite with red sandstone facings.

This spacious Scots Baronial mansion was built about 1850 as the shooting lodge of the Duke of Norfolk. New wings and a chapel were added at the end of the nineteenth century. Early in the twentieth it was placed at the disposal of a Roman Catholic Order of Marist Priests, who ran it as a monastery and school. From that time onward its vocation has been a spiritual one. At the end of the twentieth century it passed into private possession and was used as a place for religious retreats. Five years ago it was acquired by the Anthro-Tech Research Institute as a centre for anthroposophical work and the development of a new kind of technology based on the use of etheric forces to power machines – a technology advocated by Rudolf Steiner. A year later Anthro-Tech was able to purchase the adjoining Home Farm, which had originally belonged to the house. Its 250 acres are half forest, half meadows and pastures. Last June we decided to relocate our research and to dedicate this pleasant, tranquil residence and its estate to a new, desperately needed, humanitarian purpose.

Excitement and enthusiasm met the announcement of this decision at a meeting on Sunday 7th June, when the Anthro-Tech Research Institute gave the green light for the setting up of a care, training and research centre for the environmentally sensitive. For the electrosensitive persons present, the decision was one they had hardly dared hope for. They felt it could open the door to gaining public recognition of the plight of persons like

themselves, for whom life in an environment overcharged with electromagnetic radiation is sheer misery.

So far, the public at large and, in the main, the medical professions have not yet woken up to the reality of electrosensitivity, although much is happening in scientific circles. Scientists worldwide are beginning to issue warnings that humanity is running headlong into what may be the greatest calamity in modern history. Electromagnetic hyper-sensitivity (EHS) is spreading and it is spreading fast. It already affects millions. To some extent the general lack of awareness of EHS is understandable. The man in the street might well say: "Well, I live in the middle of a major city with mobile phones and Wi-Fi all round. I use them constantly myself and I've never noticed any ill effects at all. I don't really know what all the fuss is about." What he also does not know is that his seeming imperviousness can vanish overnight. EHS, when it comes, comes all of a sudden.

The main problem is that electromagnetic radiation is invisible, inaudible, odourless and tasteless, and cannot be perceived by any of the human senses. We do not normally know what it is doing to us. The same can be said, of course, of radioactivity, x-rays, many toxic substances and many other pathogens. We are simply not aware that we are being exposed to them if nobody warns us. We first begin to feel the effects of electromagnetic radiation, for example, when it exceeds a certain level of intensity, by which time it is damaging our nervous system. Even then, what we are perceiving is the pain of the injury, not the radiation itself. The radiation itself remains beyond our perception, even at lethal levels. Basically, electrosensitive persons are those in whom, for whatever reason, the threshold of awareness of the injurious effects of electromagnetic radiation to the human organism is lower, and who therefore start to feel those effects at lower levels of radiation intensity than other people do.

Although the symptoms of electrosensitivity are now well documented, and the physical causes are at least partly understood, electrosensitivity still remains baffling to scientists and doctors alike. Virtually all city dwellers today are exposed to similar levels of electromagnetic radiation as those that cripple EHS sufferers. Why do some people experience pain and sickness, while others feel nothing at all? Why does EHS come suddenly, as though something has snapped?

Moreover, the effects of electromagnetic radiation on EHS sufferers are not only physical. There are many effects on the mind and soul – mental effects and psychological effects. It seems likely that a complete understanding of this complex syndrome will only be possible with the assistance of spiritual science.

Certain of the symptoms of electrosensitivity clearly indicate an exhaustion of the sufferer's etheric forces (life forces) caused by electromagnetic radiation. This is understandable in the light of Rudolf Steiner's comments about electricity in the Agricultural Course on 16 June 1924:

"Now we must not forget that electricity always works particularly on the upper organization, the head-organization, in man and animal. [...] Once again, electricity is simply not something that should work into living creatures to promote life processes, because it is incapable of doing that. When we are actually aware that electricity lies at a lower level than that of living processes, and that the life processes endeavour to repel it, really to repel it – the higher they are, the more energetically they endeavour to do so – then if we provoke these reactions of repulsion in living creatures when there is nothing physically there to be repelled, the living creature will become nervous and agitated and more and more sclerotic."

Our etheric bodies are constantly endeavouring to repel the radiant electricity (transmissions of Wi-Fi, Bluetooth, cell phone and DECT – Digital Enhanced Cordless Transmissions – etc.) particularly from our head-organization. When these etheric forces are overtaxed and collapse, then the radiation floods into us unchecked, causing pain, sickness and other EHS symptoms. Some of these symptoms are obviously disturbances that have penetrated to the astral body (the soul).

Governments are supposed to be taking measures to protect electrosensitive persons. In April 2009 the European Parliament requested member countries to follow the example of Sweden in recognizing electrosensitivity as a genuine disablement, and urged them to ensure that electrosensitive persons are protected and have the same chances of finding employment as other people. Two years later, in May 2011, the European Council ruled that member countries should give particular attention to the syndrome of intolerance of electromagnetic fields, and should ensure the protection of electrosensitive persons – that protection to include the setting up of radiation-free areas (white zones) which should be excluded from coverage by wireless networks. These directives apply to all EU countries. Are they being followed? No.

According to a report entitled "How to survive in a non Wi-Fi zone" in the French newspaper *Le Figaro* on 1 June 2015, there are currently some four thousand rural communities in France that do not have full mobile

phone and Wi-Fi coverage. Some areas of some of these communities are "white zones", where people suffering from electrosensitivity can lead a normal, healthy life. But the report stated that this is about to change. In May this year the French government signed an agreement with telecommunications providers that phone masts would be installed in all the white zones before the end of next year, and that all communities would have full 3G access by mid-2017. Electrosensitive people will have no refuge in France anymore.

In Germany the outlook is just as bleak. This summer the German government auctioned off a band of frequencies in the 700 Megahertz range to mobile phone providers O2, Telekom and Telefonica, for the bumper price of 5.1 billion euros. These are frequencies with an extended reach and a high power of penetration. It is feared that most existing protective insulation will not screen them out, and that the few white zones left in Germany will disappear. Like their fellow-sufferers in France, electrosensitive persons in Germany will have nowhere to escape to. These prospects are shattering and tragic for the persons concerned. Some are being driven to suicide.

It is extremely urgent to ensure that the same dramatic situation does not arise in the U.K. Perhaps the only way to avoid this is for there to be very strong, active organizations dedicated to the problem, that are in a position to produce hard proof of the cause and nature of electrohypersensitivity – organizations that can arouse sufficient public concern for the welfare of EHS sufferers to sway the government. But to gather hard proof of that kind, the organizations in question would need proper research centres in radiation-free zones. Hence the very great interest in the estate described above, in the white zone near Dumfries. This estate was first mentioned in an article published in the Winter 2014/2015 issue of *New View*, which sparked quite a bit of interest. A number of people wrote to us, to find out more about it. It was immediately clear that some of them were keen to become actively involved.

On the weekend of 28/29 March 2015 a first, exploratory meeting was held at the house, attended by environmentally sensitive persons and their partners, and by trustees of *ElectroSensitivity U.K.* Several members of Anthro-Tech were present. The general feeling of the meeting was an awareness that a research centre of the kind just mentioned was urgently needed, where EHS sufferers could find relief and guidance, and where medical case studies could be made and collated, to provide a body of factual information demonstrating conclusively that EHS is an objective ailment and is caused by electromagnetic radiation. The Anthro-Tech property was considered to be an ideal place for work such as this.

A second meeting took place from the 6th to the 8th June 2015, this time with representatives of EHS organizations in Germany and Switzerland, and with

Are you sitting/sleeping in WiFi? Using cordless phones, tablets, 4G?

... and what about Smart meters that are coming your way?



Rudolf Steiner's perceptive cautions about electromagnetism are supported by much research unreported in the main media. With the advent of smart technology there is an urgent need to explore the ever-rising health dangers (to humans, plants, bees, in fact the whole ecosphere) of wireless technology.

Please see [tinyurl.com/esmog5](http://tinyurl.com/esmog5) for a presentation by Dr Tresidder GP and colleagues, plus links to research material. Also visit [www.bioinitiative.org](http://www.bioinitiative.org)

**Be 'Wise' instead of 'Smart'**



interested persons from other continental countries – all of them students of anthroposophy. Some of the people who had attended the first meeting also took part.

This second meeting went much more deeply into the question of the nature of the care and training that could be offered to electrosensitive persons, and the character of the medical research to be carried out. Dr. Erica Mallery-Blythe, medical adviser to *ElectroSensitivity U.K.* spoke of realizing her dream of arousing public awareness and understanding of environmental sensitivity, and of getting it properly recognized as a disablement. She felt that if Anthro-Tech were willing to make the property available for the project, it would also be possible to run courses there for doctors and other medical practitioners, to give them a clear idea of what electrosensitivity really is, and of how to develop supportive treatment of it. Anthroposophical therapists Viviane and Laurent Schimmel from France indicated that they might be able to work together with the core group, using a therapeutic approach to electrosensitivity they have already developed.

It was envisaged that, when finances permit, the existing oil-fired heating in the main house would be replaced by a biomass system; the estate can supply sufficient firewood for this. The land will be farmed biodynamically, and the project will aim at being as self-sufficient as possible. The property has the added advantage of being only a couple of miles from a well-stocked biodynamic farm shop and café, voted best farm shop in Britain, with its own bakery, creamery and award-winning cheeses.

Many environmentally sensitive persons are not only sensitive to electromagnetic radiation; their condition makes them also chemically sensitive. In order to create a suitable environment for them, all major sources of disturbance need to be eliminated. The whole estate including the main house and other dwellings, will be digital-free: no Wi-Fi, computers, i-Pads, e-Books, mobile phones, televisions, audio and video devices, digital cameras and so on. Care will also be taken to avoid chemically intrusive detergents, cleaning materials, sprays and the like. No alcohol or drugs of any kind will be allowed on the estate. It will be a place for the healing of mind and body.

If this vision of a gentle, healthy, protected environment in a quiet, pleasant valley makes you feel wistful, take heart! It is planned to set aside a few bedrooms for people who wish to come from time to time for a holiday or a digital-free retreat, to de-stress, to connect again to Nature, and to replenish their exhausted reserves. The income from these paying guests will help fund the main work of the centre. Anthro-Tech may also hold anthroposophical conferences here with the same aim in view.

For persons interested in the work of Anthro-Tech, a holiday here will give them the chance to find out more. The research and development done at the Anthro-Tech Institute and its Scottish sibling, *The DewCross Centre for Moral Technology*, is based wholly on the work of Rudolf Steiner. Anthro-Tech will be working closely with *ElectroSensitivity U.K.* to guide the EHS project. We are particularly keen to have committed anthroposophists working in it. We shall need persons with the appropriate skills and abilities. The charity that will be running the centre will initially have no financial resources to speak of. It will not be in a position to pay salaries, but will offer board and lodging for the dedicated people working in the core group. It is looking for a house manager/manageress, a cook, someone to do the accounts and general administrative work (*not* on a computer), someone for general maintenance and gardening. Biodynamic farmers and foresters are also needed. Trained therapists and persons with anthroposophically oriented medical or nursing skills would be particularly welcome.

If you are interested in joining our core group, or would simply like to know more about holiday accommodation and retreats, please do not hesitate. Write to:

Anthro-Tech EHS Initiative  
c/o Torosay Castle,  
Craignure,  
Isle of Mull PA65 6AY.  
SCOTLAND

*Paul Emberson lives in Switzerland.*

# Working with the Forces of Life

by Paul Emberson

How delighted a sculptor might be to find a block of the very finest wood, in which he or she could bring to outer expression a form that has been living only in the imagination. The sculptor would pick up mallet and chisel, chips would fly, and the mental image would gradually take shape in the wood. Thus does the human being, by his art, mould the substances of the physical world according to the pictures in his mind. The builder of machines proceeds in a similar manner, though in our time the substances he chooses and the techniques he employs differ somewhat from those of the sculptor. In the age of Ancient Greece there was as yet no distinction between art and technology. The Greeks called them both technics: *τεχνη*. Later on the two became separate; one was pursued for its aesthetic qualities, the other for its utilitarian value.

Both the artist and the technician must know their materials well. They must also have a good understanding of the physical forces they use, and considerable skill in applying them. The sculptor must gauge accurately the strength of the mallet's impact and the angle of the chisel, to produce the desired shape and depth of cut. For his part the builder of machines must know how to cast, forge, mill and turn the metals he uses. When the sculptor creates a statue, he has to judge where its centre of gravity will be. Were he to give it an unbalanced shape it would fall over. As for the machine builder, he must understand, and balance out, the forces that will come into play in the functioning of the machine – the pressures, the forces of traction and torsion and the like – otherwise the machine will tear itself apart. Over the centuries and millennia man has acquired all the necessary knowledge and skills for his arts and crafts; he has become the master-craftsman of the lifeless substances of the Earth.

Nature herself is a sculptress of surpassing talent. The living forms she creates are beautiful beyond compare. But she proceeds in a wholly different way from that of a human artist. The magnificent trunks and boughs of the biggest trees are sculptures of another kind. Nature does not need to hew them out of great blocks of wood, as a human artist would have to do. As we all know, she grows even the mightiest trees from small seeds you can hold in the palm of your hand. What we do not know is *how* she does it. In spite of all our scientific and

technical prowess we are bound to admit that we have so far failed completely in our endeavours to discover what life is.

True enough, we learned in the twentieth century, by dint of endless tinkering with seeds, animal stem cells and the like, to interfere with and modify the growth patterns and processes of living creatures, both plant and animal. This reached a certain culmination in the final decade of that century with the cloning of Dolly and other sheep at the Roslin Institute near Edinburgh. Meanwhile ruthless, profit-hungry firms like Monsanto were making inflated claims about their genetically modified strains of cereals and food plants that were “pest-resistant” and “heavy-cropping”. The most outstanding achievement in that field was the successful technique of so damaging the genetic structure of the seeds of cereals and other food plants, that the plants growing from them produce sterile seed, which the farmer cannot sow for another year's crop – he is obliged to buy new seeds every year from his supplier. These meddlers with the life processes obviously have not the slightest notion of what life really is; the question is in any case of little concern to them. But it is to be hoped that when the day comes, on which the cumulative damage to these life processes is terminal and no food plants grow anymore, there will be other human beings who will have grasped what life is, and will have learned to work in a moral, constructive way with the life forces.

From numerous statements made by Rudolf Steiner it seems clear that mankind was intended to begin developing another kind of technology in the twentieth century. This new kind of technology was to have possessed a highly moral character and was to be based on the proper use of the life forces at work in the germination and growth of plants – the same forces that Nature uses to form the trunks and boughs of the great trees of which we spoke. It would have been utterly different from the so-called genetic engineering of Monsanto and others, whose unscrupulous interfering with the life processes is not even a caricature of what the new technology was intended to be. Mankind was to learn how to work directly with the etheric forces, in agriculture, medicine and, above all, in machine technology.

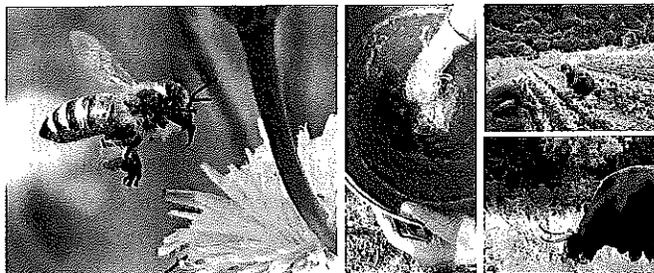
Now, one might at first imagine that machine building is of lesser importance for human life than agriculture, medicine and the other essentials. And yet it will become apparent in the very near future that this is by no means the case. In machine technology we are developing our own future physical bodies, because man will be "forged together" with his machines, to use Steiner's expression. What this means in a concrete sense, if we take only our present technology into consideration, is that, increasingly, artificial devices will be incorporated into our physical organism until our body has finally become a machine. It is not a question of being for or against developments of this kind: they have to come, Steiner said. The real question is whether they come in the right way or not.

Most of the prostheses introduced into the human body by surgery today are purely mechanical elements to replace defective parts of the skeleton: artificial bones, articulations and the like. But it is now becoming common practice to reinforce or replace limbs, vital organs and other dynamic elements of the body by powered prostheses. Since these cannot be driven by the life forces of the patient's own body – there being no understanding of what life is – they have to be powered by other means. Miniature steam engines, petrol or diesel motors and the like are not practical: a steam-powered pacemaker or an artificial heart driven by a diesel motor are virtually unthinkable. In the absence of etheric technology [based on and imbued with the forces of life itself] we are obliged to resort to electricity, which is a force of death. We have to use miniature electric motors powered by little batteries or accumulators.

If the trend towards the fusion of man and machine continues in the present direction, the active devices that will be incorporated in our bodies will all be powered by electricity. Today these devices are implanted in ailing persons to remedy defects in their organism. Soon, however, new generations of prostheses will be implanted into healthy persons to enhance their bodily capacities. Nanotechnology, the technology of microscopically tiny devices, is expected to replace medicine as we know it. Ultra-miniature robotic devices called nanobots will be introduced into our bodies to destroy pathogens, repair DNA, and reverse aging processes. Furthermore, according to Ray Kurzweil, the foremost exponent of Artificial Intelligence, we will shortly be able to redesign all of the systems in our bodies and brains to be far more capable and durable. In the long run human beings will consume less and less traditional food because they will increasingly be powered by electricity. Instead of food plants for human consumption, farmers will grow plants such as rape, to fuel power stations. This is already being done on a wide scale in some countries.

The most exciting prospect for the out and out

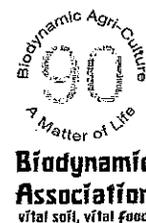
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materialist is, of course, the direct linking of the human mind (the brain) to the Internet. Ten years ago Kurzweil, in his carefully researched and wildly acclaimed book, *The Singularity Is Near*, estimated that the fusion of biological (human) intelligence with nonbiological intelligence would come by the thirties of this century. It would bring great benefits with it:

"Most significant will be the merger of biological and nonbiological intelligence, although nonbiological intelligence will quickly come to predominate. There will be a vast expansion of the concept of what it means to be human. We will greatly enhance our ability to create and appreciate all forms of knowledge from science to the arts, while extending our ability to relate to our environment and one another."<sup>1</sup>

Naturally, nonbiological systems will be electrically powered and will be regulated via the Internet.

In forming our judgement as to whether such visions as these are too extravagant, well founded though they may be on detailed knowledge of the technologies involved, we should not lose sight of the fact that, a century before Kurzweil, Steiner's own descriptions of what was to come were far more sweeping and world-changing. He too was talking about "a vast expansion of the concept of what it means to be human". Steiner spoke, not of the enhancement of the physical organism by incorporating electro-mechanical components into

it, but of the separation of the etheric body [that 'body' which penetrates and sustains life in the physical body] from the physical, whereby the human being would live consciously outside the physical body, directing its activity with more highly developed life forces. He did not speak of a vast expansion of the mind through the fusion with the Internet, but of an even vaster expansion through the acquisition of perception of another world: the etheric world. He did not speak, as Kurzweil does, of morphing the physical world through nanotechnology and reversing damage to the environment; he spoke of control over the life forces themselves, enabling man to create new plants and other living entities, fashioning Nature anew. Man was to become the master-craftsman of the living.

In order to become the master-craftsman of the living the human being has to develop a moral, etheric technology based on the forces given to the Earth by Christ through the Mystery of Golgotha [the Death and Resurrection of Christ]. These are the Grail forces [the substance of profound refreshment and renewal]. If we think deeply enough about these things, we soon realize how vitally important it is for humanity to develop that moral technology before electronics, nanotechnology and robotics sweep the board. But how do we go about developing it?

This was the cardinal question that stood before the circle of friends who, in 1989, created the Anthro-Tech Research Institute in the little hamlet of Les Sciernes-d'Albeuve on a high plateau of the Swiss Pre-Alps. They were a mixed group, of engineers, scientists, teachers, artists and social workers, who shared a deep commitment to Steiner's spiritual science. Their goal was to go as far as possible in the development of etheric technology. In those days there was no literature at all on the subject, save for the few indications Steiner had given, now and again, during his twenty-four years of lecturing. And those indications were by no means easy to understand. There was, moreover, no one else working in that field, who could have given to the friends the benefit of his or her experience. An important part of the work of the Anthro-Tech Research Institute has therefore been to piece together from Steiner's widely scattered comments an overall view of what etheric technology is and how it works.

The first characteristic that emerges clearly from Steiner's brief comments is that the technology is based on the interaction of oscillations or vibrations – something we may call resonance, or sympathetic vibration. Steiner employs a very descriptive term in German: "ineinanderklingende Schwingungen", which can be translated literally as oscillations sounding within one another. This expression seems, at first glance, to suggest acoustic resonance, which is probably the simplest form of mechanical resonance. Take two identical tuning-forks, ideally each of which is fixed

upright on its own rectangular wooden resonance box. Set the tuning-forks a short distance apart and strike one of them so that it vibrates, giving out a tone of the frequency to which it is tuned. The other tuning-fork will begin to vibrate spontaneously, and will give out the same tone. This is acoustic resonance. It is a very sensitive process, its efficiency being dependent on ambient conditions.

Could acoustic resonance itself become a source of motor power if etheric forces were somehow involved? If you had a million identical tuning-forks set on their resonance boxes and you struck one of them, might they not all sound in unison by resonance if the conditions were right, producing waves of acoustic energy far greater than the small amount of energy required to strike the first tuning-fork? Could acoustic resonance thus be used to produce an augmentation of force? This would go against the conventional laws of physics – but then all of Nature's living processes go against them. It was an idea that had intrigued many an inventive mind and which was entertained for a time by the researchers at Anthro-Tech.

There was, after all, good ground for supposing that the interaction of oscillations, to which Steiner had referred, might indeed be some form of acoustic resonance. I have said that when the circle of friends founded the Anthro-Tech Research Institute in 1989, there was no-one else working in the field of etheric technology. But one person – a most outstanding researcher – had worked in that field a century before and had actually made a breakthrough. That person was the Irish-American inventor John Worrell Keely. Steiner spoke on no less than six occasions of Keely in that connection and confirmed that he had indeed developed an initial form of etheric technology. Perhaps the most striking thing about Keely's machines was that he set them in operation by means of musical tones played on a violin or other instrument, or even sung or whistled. No one understood the actual working of his system, but Keely himself said his machines were powered by sympathetic vibration produced by musical tones. This seemed to substantiate the idea that acoustic resonance is a possible driving force in etheric technology.

The basic principle, as inferred also from Steiner's various comments, seemed to be this: The machines of etheric technology are set in operation by a small impulse (in the form of oscillations of some sort) coming from the human soul. This initial impulse is then so greatly amplified in the machine itself by means of resonance that it becomes powerful enough to act as a mechanical driving force. The Anthro-Tech Research Institute therefore set out to explore the phenomenon of resonance with that in view. This investigation – one of our main fields of work – would prove to be long-term, fundamental research. (Another field of work was the investigation of the effects of electromagnetic radiation

on biological processes.) One seemingly promising line of inquiry was that of resonance between swinging pendulums. There are accounts of such resonance from as early as the time of Huygens, the Dutch mathematician, astronomer, and physicist, in the seventeenth century. The shops of certain horologists are mentioned, in which the pendulums of all the clocks were swinging together in perfect unison. It was assumed that this resonance was of like nature to that of tuning-forks.

At the end of the nineteen-seventies I had made the acquaintance of a very prominent French anthropologist, Prof. Emile Rinck of the Sorbonne University in Paris. Emile Rinck was fascinated by phenomena of the kind I have just mentioned. He recounted that he had heard about a man in Eastern Europe, in whose house there were a great number of bottles hanging from the ceiling on strings and all swinging in unison. Rinck had visited the man and had witnessed the curious spectacle. He mentioned something, the full significance of which was not brought home to me at the time, namely: when the man went away on holiday the bottles stopped swinging, and started again (or he started them again) when he returned to his house.

Over a period of about ten years the researchers at the Anthro-Tech Institute carried out a great number of experiments with tuning-forks and with pendulums, both in Switzerland, where we have our main laboratories and workshops, and at our premises on the Isle of Mull in Scotland. We built simple pendulum systems and complex ones and developed special escapement mechanisms to drive them. We constructed systems with constrained pendulums that can swing only in one plane, and so-called chaotic pendulums that can swing in any direction, like the bottles hanging from the ceiling. On a few occasions we seemed to be tantalizingly close to achieving amplification of the oscillations by resonance. Yet it never quite happened and we gradually realized that it never would. There had always been a small, nagging doubt in the back of our minds. Steiner had insisted that the functioning of the machines of etheric technology depended on the moral qualities of the operator: the machines would only work for morally good persons. This implied an additional factor not provided for in our mechanisms. The resonant systems with which we were experimenting were such that, presumably, if they had been able to achieve the desired amplification of forces they would have worked for anyone irrespective of his or her moral standing.

Another troubling thing that I had noticed over the years was that if you go into a shop that sells genuine pendulum clocks today (there are a number of such shops in Switzerland), the pendulums are not swinging in unison – not even the pendulums of identical models. In the long run the conclusion was inescapable: the driving force in etheric technology is not mechanical resonance, acoustic or otherwise. Keely himself had

not fully understood what made his machines go. He had believed he was working simply with acoustic resonance, but in fact some other element was the determining factor. Clearly the human being, with his particular soul qualities, played an essential role. Keely's machines worked only for Keely. The bottles hanging from the ceiling only swung in unison when the particular man was there. Likewise, in the case of the old horologists' shops, the soul qualities of the horologists themselves must have been the critical factor because clock pendulums no longer swing in unison today. Steiner was talking about resonance of a different kind: etheric resonance.

I stated this conclusion in my book *Machines and the Human Spirit*. It was clear that the conventional laws of physics do hold good even in the most ingenious systems of pendulums and tuning-forks as long as mechanical forces alone are acting. The idea of a million tuning-forks producing great waves of acoustic energy was a seductive one, but it would not work. All purely mechanical systems are less than a hundred percent efficient; the power produced by the system is less than the power supplied to it. To produce an augmentation of force the oscillations have to be of a different kind. They obviously have to correspond, in the outer world, to the vibrations of human feelings in the soul. These vibrations are not frequencies, like the vibrations of tuning-forks, but are rhythmic oscillations, the rhythms of which are like the complex rhythms we find in Nature. I referred briefly to complex natural rhythms of this sort in *Machines and the Human Spirit*, and have dealt with them more fully in Volume II of my book *From Gondhishapur to Silicon Valley*. Mechanical resonance, then, is not the basis of etheric technology – neither of Resonance Technology nor of Moral Technology (as I called them in *Machines and the Human Spirit*). One needs to develop resonance of another sort. Our reflections led us back to a description given by Steiner of the difference between the laws governing the operation of machines and those at work in the life processes of Nature. He gave it in his First Scientific Lecture Course, on 23 December 1919.

Steiner first pointed out that whenever we look for the cause producing some physical effect, we always find this cause to be acting from some particular point in the spatial world. The force that impels the sculptor's chisel is acting from the mallet; the force that swings the mallet is coming from the muscles of the sculptor's arm. Likewise the force that sets a second tuning-fork in resonant vibration proceeds from the tuning-fork that was struck:

“... so too with every manifestation of force we shall be able to say that the force proceeds from one direction and works towards another. Thus we may well grow accustomed – for all the workings of Nature – always to look for the points from which the forces proceed.

Precisely this has become habitual, nay dominant, in Science. Indeed, it is valid in many cases. There are whole fields of phenomena, which we can thus refer back to the points from which the forces governing them proceed. We therefore call such forces "centric forces", inasmuch as they always issue from point-centres. It is indeed right to think of centric forces wherever we can find the many single points from which there proceed quite definite forces that govern a given field of phenomena."<sup>2</sup>

Certainly, in conventional science and technology today we always look for centric forces as the causes of observed effects. But we cannot do this, according to Steiner, if we wish to discover how Nature shapes great trees, or any other of her life processes. His words were:

"You cannot possibly understand any phenomenon in which life plays a part if you restrict yourself to this method, looking only for the potentials of centric forces. Say you were studying the play of forces in an animal or vegetable embryo or germ-cell; with this method you would never find your way. No doubt it seems an ultimate ideal to the science of today, to understand even organic phenomena in terms of potentials, of centric forces of some kind. It will be the dawn of a new world-conception in this realm when it is recognized that things cannot be done in this manner. Phenomena in which life is working can never be understood in terms of centric forces. Why, is this so, – why can't they? [...]

In fact, the forces that are essential to living things have no potential; they are not centric forces. If, for the merely physical effects at a given point *d*, you sought to trace the causes to influences working from *a*, *b* and *c*, you would indeed be referring to the effects of centric forces, and this would be in order. But if you want to study the effects of life you can never do this. For these effects there are no centres such as *a* or *b* or *c*. Here you will only take the right direction with your thinking when you speak as follows: Suppose that at *d* there is some living entity. I look for the forces to which its life is subject. I shall not find them in *a*, nor in *b*, nor in *c*, nor when I go still farther afield. I will only find them when, as it were, I go to the very ends of the world – and, what is more, to the entire circumference at once. Taking my start from *d*, I should have to go to the outermost ends of the Universe and imagine forces to be working inward from the spherical circumference from all sides, forces which in their interplay unite in *d*. It is the very opposite of centric forces with their potentials."<sup>3</sup>

And now Steiner drew his listeners' attention to something of singular importance. We can measure centric forces, because their whole potential is concentrated in the point-centres from which they act. We can measure the force of impact of the mallet, because it is concentrated in the mass and velocity of the swinging mallet. But we cannot measure cosmic forces at their source because there is nothing to measure. Let

us imagine powerful life forces working at the point *d*. As we follow them back to their source they spread out and out, ever more thinly, until they are finally spread over the infinite periphery of the Universe. At any given point on that periphery the force radiating from it is infinitely small: it is unmeasurable. Cosmic etheric forces have no potentials. Their power arises not at their source, but there, where they come together:

"How can you calculate a potential for that which works inwards from all sides, from the infinitudes of space? In the attempt I would have to divide and subdivide the force; the total force would have to be split up into ever smaller portions. As I got nearer and nearer the edge of the world the force would be completely sundered, and my calculations with it. Here, in effect, it is not centric forces; it is cosmic forces that are at work. Here, calculation ceases."<sup>4</sup>

This brings us to the essential point:

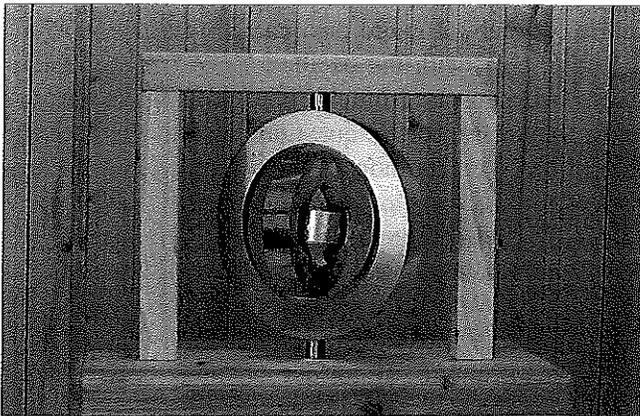
"In all that man makes by way of machines – in all that is pieced together by man from elements supplied by Nature – we find purely centric forces working, working according to their potentials. That which exists in Nature outside us, on the other hand – even in inorganic Nature – can never be referred exclusively to centric forces. In Nature that simply does not occur; things never work completely in that way. Save in the artificial things made by man, the actions of centric forces and cosmic forces always flow together in their effects. In the whole realm of so-called Nature there is nothing in the proper sense un-living. The one exception is what man makes artificially: man-made machines and mechanical devices."<sup>5</sup>

In all the processes of Nature, then, peripheral etheric forces and centric physical forces are flowing together. Here was the additional factor not provided for in the mechanical systems with which we had been experimenting. The cosmic forces had to be brought in. Only centric forces are at work in mechanical resonance systems like pendulums and tuning-forks, and these alone cannot produce an augmentation of force. In etheric technology, which uses life forces, it is precisely the peripheral forces without potential that are the actual driving power, just as they are in Nature. The driving power arises, so to say, at the point *d* in the machine, where the inflowing peripheral forces are united, and where they interact with the centric mechanical forces. This called for a further step in our research. We realized that Keely had been intuitively aware of these things. He had stated that machines using etheric forces have to contain a "neutral centre", as he called it. From his description of it, a neutral centre is the same thing as the point *d* in Steiner's last example – a focal point of cosmic forces working inwards from the infinite periphery. A seed is another such neutral centre, in which the whole cosmos is working.

The inflowing cosmic forces, however, are not coming

from a static source. They are flowing inwards from the circling stars, through the rotating solar system with the dynamic spheres of the orbiting planets, to the spinning Earth. They carry inwards these “rhythms within rhythms”, which produce the complex (compound) rhythms of Nature. Of the same kind are the complex rhythmic oscillations with which we must work in etheric technology to obtain the amplification of force.

By good fortune, or destiny, the Anthro-Tech Research Institute had already taken up, in 1991, a separate line of research, which had soon become our principal field of work. This had come about in the following way: Steiner was reported to have given an indication that, for the proper advancement of technology, it would be necessary to develop mechanisms capable of rotating, simultaneously, on the three axes of space.<sup>6</sup> The exact circumstances in which he gave that indication are not recorded. But the indication had intrigued more than one generation of anthroposophical engineers, probably because, on the face of it, the construction of a mechanical system in which an element is driven to rotate in all three directions simultaneously is a physical impossibility. You cannot connect a mechanical drive to something that is spinning in all directions at once. Various attempts to solve the problem were made over the years, but it was not until 1992 that the solution was found, at Anthro-Tech. A first functional device was built in 1993, and the following year a special form of construction for it was discovered, which we baptized



*Harmogyra* – Harmo (harmonious) and Gyra (spin).

It was immediately evident, for various reasons, that this was the kind of device that Steiner had meant. The Harmogyra consists essentially of three concentric rings. The outermost ring rotates on its axis. It carries within it a second ring which, in addition to the motion imparted to it by the first, also rotates on its own axis perpendicular to that of the first ring. It is thus effectively turning on two axes: its own and that of the first ring. Within the second ring there is a third, carried by the other two but also rotating on its own axis, which is perpendicular to theirs. It is thus turning simultaneously on all three spatial axes. The rotation of the rings on their axes is powered by a hidden, variable drive mechanism.

The Harmogyra is an aesthetically beautiful machine. It feels so intuitively ‘right’ that technically minded persons, on seeing it, have exclaimed: “Yes of course! That is the obvious way to do it. I could have discovered that myself!” This is a most encouraging reaction, although the fact remains that, in reality, nobody else did discover it.

What is so special about the Harmogyra? When it is in operation, the innermost ring loses all spatial orientation with respect to the outer world. Since it is spinning in all directions, the orientations ‘up’ and ‘down’, ‘front’ and ‘back’, ‘left’ and ‘right’ are cancelled out. Its only stable reference point in space is its own centre. Spatial relationships are replaced by relationships in time. The Harmogyra can be regulated so that all three rings rotate at the same speed, or at different speeds. If, for example, it is regulated so that the second ring executes three rotations in the time it takes the first ring to execute two, then they are spinning together in a ratio of three to two. This ratio is that of a perfect fifth in music. The three rings can be given frequencies of rotation that correspond to the frequencies of three tones forming a musical chord. Major or minor chords of any scale can be reproduced. Watching a Harmogyra spin, we are ‘seeing’ a musical chord of three tones. It is this, rather than acoustic resonance, that actually corresponds to Steiner’s expression in German: “ineinanderklingende Schwingungen” – oscillations sounding within one another – because in fact his expression does not imply that the oscillations are all of the same frequency. They can be of different frequencies.

The Harmogyra is often thought of as being, in itself, a complete machine and, indeed, it has been used as such in practical work. But its true role is, perhaps, as a central element of a more complex machine, as we shall see in what follows.

Let us turn again to the question of the kind of oscillations transmitted from the human soul to the machines of etheric technology in order to set them in operation – the kind of oscillations that can be amplified in those machines by resonance. We said that to produce an augmentation of force in that way, the resonant system in the machine would have to correspond to the vibrations of human feelings in the soul. Steiner put it thus:

“Man has to seek to place the spiritual-etheric in the service of outer, practical life. I have drawn your attention to the fact that in the fifth post-Atlantean epoch men will have to solve the problem of how to transmit to machines waves carrying their moods, their inner movements of soul. They will have to solve the problem of how to bring the human being into connection with that which must become more and more mechanical.”<sup>7</sup>

The fifth post-Atlantean epoch [a time derivation that Steiner uses to explain when different impulses come into human development] is our own epoch of civilization,

which began in the fifteenth century and will last for two thousand years. The machines to which Steiner is referring are, of course, those of etheric technology. Concerning the characteristics of the waves (oscillations) transmitted to them, and their correspondence to the complex rhythms of Nature, he said:

“True natural science will arise through our penetrating with our understanding the rhythms of Nature. But through this insight into Nature’s rhythms one is led also to a certain practical application of rhythmic processes in technology. This is the goal of future technology: to develop a tremendous motor force by means of the resonance of oscillations – of oscillations that are small at first but would amplify each other simply by the working of resonance.”<sup>8</sup>

Putting all these things in a nutshell, we may say that, for the proper development of etheric technology, three main criteria need to be fulfilled:

1. The human being must be able to transmit to a machine his soul-vibrations of a moral character;
2. There must be some form of resonating system in the machine, the oscillations of which correspond to the vibrations of moral feelings in the human soul;
3. The machine must contain a neutral centre, where the rhythmic vibrations of human moral feelings transmitted to it can enter into resonance with the rhythmic oscillations of cosmic forces working inwards from the infinite periphery.

The first criterion relates to the human being himself. Steiner specified which moral force can set in motion the human-cosmic resonance in the machines of etheric technology: it is the power of selfless love. Human beings must learn to develop and transmit selfless love. Steiner knew this because he was a high initiate and understood etheric technology. But even for ordinary thinking it makes sense. Selfish feelings in the soul are like centric forces in the physical world. Selfless love, on the other hand, has the same quality as cosmic forces without potentials, the power of which arises at the point where they are united. Only oscillations having this quality can produce an amplification of force by resonance.

Now, the capacity to act out of selfless love can be acquired on any true path of spiritual development. There is, however, a special path of spiritual training given by Steiner, which is particularly appropriate for its attainment. It is the true Grail path, and is called the Path of Selfless Love. It can be followed only by circles of human beings, not individuals. In the spiritual work of such circles; each member works for the others, not for himself. Interestingly, when human beings work together selflessly in that way there can also be an augmentation of force – not mechanical force, naturally, but the spiritual power of the circle, which can increase manifold. The Path of Selfless Love is a deeply moral training of a new

kind, which is described in some detail in Volume II of *From Gondhishapur to Silicon Valley*. This training is being followed at the Anthro-Tech Research Institute and in circles of friends connected with Anthro-Tech.

As for the second criterion, we believe that, when fully developed, the principle of the Harmogyra can fulfil its requirements. When the first small, primitive Harmogyra was demonstrated, some of the persons present experienced a particular sensation in their heart and breathing, accompanied by certain feelings. All subsequent models have produced similar effects when in operation. Not everybody is sensitive to them, but a great number of people react in their sensations and feelings to the Harmogyra movement, with differing degrees of intensity. Strong men have burst into tears on seeing a Harmogyra rotate. It has become abundantly clear over the years that the musical oscillations of the Harmogyra have something fundamental in common with the vibrations of feelings in the human soul.

There remains the third criterion. Mankind must discover how to create neutral centres in the machines of etheric technology, where cosmic life forces radiating inwards from the periphery interact with centric mechanical forces. This is a daunting challenge – Keely left no indication of how such a thing could be achieved. And yet it may not be completely beyond reach. The question we put to ourselves at Anthro-Tech is this: could a Harmogyra of some kind, which is in resonance, on the one side, with the vibrations of feelings in the human soul, be so constructed that it would possess a neutral centre, whereby it could also enter into resonance, on the other side, with the oscillations of cosmic etheric forces working in from the periphery? We do not know the answer to this question, but it does not seem impossible. The Harmogyra would thus be the central part of a more complex machine working with etheric forces. To find out, we have to go back to the drawing board and start work on a new line of development of the Harmogyra. We have to build prototypes, test theories, and so on. It will be a major undertaking, in which we will have to venture still further into uncharted territory. Anthro-Tech decided to take up this challenge in 2014. It is being taken up, too, by the new charity created in Scotland by members of Anthro-Tech: The DewCross Centre for Moral Technology. For this work the Charity has converted outbuildings to machine shops for high-precision engineering, at a property gifted to it on the Isle of Mull.

We are under no illusion as to the magnitude of the task before us, but we believe we can glimpse the way forward. Time will tell whether we have chosen the right direction or not. One thing is certain, however: this is an undertaking that will stretch the resources of Anthro-Tech and the new Charity, both human and material, to their utmost limits. Serious help of any kind would be more than welcome.

# Greening the planet Earth

## *What is "green" Energy?*

Throughout the countries of the world there is a tremendous upsurge of goodwill and of readiness to make sacrifices in order to help our ailing planet. Many people long to take some form of positive action to mitigate climate change and the gradual death of Nature. Of those in anthroposophical circles, most would like to do so in a morally good way, in keeping with the ideals and spiritual necessities voiced by Rudolf Steiner. Yet here they may find themselves in something of a quandary: what is the right thing to do? The answer is not immediately obvious. We see many of them moving to embrace conventional, so-called "green" technologies using "renewable" energies such as solar power, wind power, geothermal power and the like, in the belief that what is said in favour of them is true. Therein lies a problem.

Every scientist knows that there is no such thing as renewable energy. The very idea stands in flagrant contradiction to the basic axioms of both natural, and spiritual, science. Science tells us that there is a finite amount of physical energy in usable form. When it is used, it engenders heat that is dissipated in the Cosmos and can never be recovered. Gradually all energy and matter go over into dissipated heat. Thus the consumption of physical energy in any form leads gradually to what Rudolf Steiner called the "heat death" of the Cosmos. Someone might exclaim: Oh come on! That's purely academic. The reserves must be so vast that we could keep on using as much solar, wind and geothermal energy as we wanted for the rest of Earth evolution. That idea, however, completely misses the point. We do not draw energy directly from the Sun, we take it from the Earth's global ecosystem. This ecosystem is a fragile, finely balanced interplay of forces, which can easily be thrown out of kilter if we drain energy from its living, organic processes. Depleting the layers of what we like to call fossil fuels in the Earth's crust has already caused problems enough, but draining the living energies of the biosphere will have much more drastic consequences.

As for the claims of green energy promoters that their technologies produce "clean" power: the opposite is true. They produce one of the most noxious forms of energy known to mankind: electricity. Electricity works in opposition to the forces of life. "Once and for all," said Rudolf Steiner in Koberwitz in 1924, "electricity is not something that should act on that which is alive." Electricity is a mineralizing, sub-natural force. It is an essential force

which, as the death-force, has its role to play in the natural order. But by 1924 Steiner had spent twenty years trying to bring people to understand that when we use electricity in technology in the way we do, it can only harm the human being and damage Nature. In the lessons he gave to his pupils in the Esoteric School of the Theosophical Society he went deeply into the spiritual background of electro-technology, showing that its very purpose is to destroy humanity.

Later on, Rudolf Steiner did all he could to alert people to the dangers of using alternating current, which heightens the destructive action of electricity. He foresaw the grave problems it would bring with it, problems that beset us today. Millions die of cancer and other degenerative illnesses induced by electromagnetic radiation - far more than the victims of all the other forms of pollution put together. The causal relation of electromagnetic radiation to cancer has long been established by scientific studies, beyond any shadow of doubt. Notwithstanding the aggressive, callous campaigns of misinformation financed by multinational companies with vested interests in electrotechnology, many governments have issued warnings about the pathogenic effects of electromagnetic radiation, and even international bodies as conservative as the World Health Organisation have finally admitted, for example, that the microwave radiation from mobile phones can cause brain tumours. But this had been known for years.

The electromagnetic force is a death-force; it is no less pathogenic when it is generated by wind farms or photovoltaic solar panels than when it comes from nuclear power-stations. "Electricity works on us in a dreadfully unconscious way," Rudolf Steiner said, "and people simply do not know where certain things are coming from." It works in direct opposition to the life-processes of the etheric body. In other words: it kills us, quickly or slowly - it cannot do anything else. Mother Nature is not dying because of exhaust gases from cars or smoke from coal-burning fires. She is dying because we generate the death-force of electricity on such a gigantic scale today that it outweighs the life-forces of the biosphere. Throughout the world the life-forces are being overwhelmed and driven out of the physical plane of existence. It is no wonder that Nature is dying - the wonder is that she has held out for so long.

This is the great central problem of technology today: we should be using life-promoting forces, not electricity.

There are many secondary aspects to it. Take the renewable energy movement itself - the financiers and industrialists behind it know full well that it cannot supply the world's needs. It is a money-spinning red herring. Wind farms, for example, are a pathetically inadequate form of energy production. I doubt that any impartial, competent engineer believes that wind power can be economically viable or make a meaningful contribution to meeting the world's energy demands. In any case, wind being unpredictable, back-up power-stations (nuclear or fossil-fuel) are necessary. But it has proved a very lucrative business for the turbine manufacturers, the wind farm entrepreneurs and the financiers, since their profits have been heavily subsidized by governments with taxpayers' money. And so we pay for the erection of ugly, inefficient, towering, concrete monsters all over the lovely wind-swept hills and shores of our lands, spoiling nature and causing serious ecological problems. These problems are much more significant than seems to be generally realized.

### **Wind farms**

Let us look a little closer at wind farms. The adverse effects of the infrasonic noise and the solar flicker of the turbines on human health and the natural environment are well-documented today. It is also a widely publicized fact that wind turbines kill large numbers of birds and bats. Even if some people do not care so deeply about bats, the decimation of popular bird species does not leave them unmoved. In California, the Altamont wind farm alone kills between 40 and 60 golden eagles a year. I do not have the figures for wind farms in the British Isles.

There is, however, another danger which seems to have escaped the attention of ecologists so far. We do know that the rotation of the turbine's blades driven by the wind imparts a horizontal vortex motion to the air-flow. It is, in part, this vortex which draws flying creatures into the reach of the rotating blades. But what happens to the vortex when the air passes beyond the turbine? In normal conditions the spiralling movement will collapse. It will collapse, that is, unless it just happens to encounter another, similar vortex, in which case if they are synchronous they will combine.

There is an image beloved of writers about chaos theory. It is the so-called "butterfly effect" thought up by the meteorologist Edward N. Lorenz to illustrate the principle of unpredictability. He pictured a butterfly fluttering its wings and creating tiny air waves. It is just possible, though unlikely, that these tiny air waves could meet others with which they were perfectly synchronized, in

which case the waves would combine and become stronger. In the further, unpredictable event of the resulting stronger waves meeting another train of waves with which they were perfectly synchronized, they would combine ... and so on. In this imaginary scenario, the fluttering of a butterfly in Brazil sets in motion a chain of events resulting in a tornado in Texas - a possible, if most unlikely, occurrence.

But what of the vortex created by the rotating blades of a behemoth wind turbine? How likely is it that this could meet and combine with a similar, horizontally spinning air-movement? The likelihood is by no means as remote as in the butterfly scenario, particularly in the case of the largest wind farms, where there are more than a hundred simultaneously spinning turbines. The fact of the matter is that we are seeding the winds with horizontal spinning movements on a vast scale all over the world. Now, it should be borne in mind that it is just such horizontally circulating air movements as these that are the initial stage in the formation of cyclones, which are engendered when the horizontally spinning winds encounter a warm updraft and are lifted into the vertical. Is it mere coincidence, then, that there has been such an increase in cyclones - and the unexplained occurrences of devastating minicyclones in countries where these were unknown - in parallel with the development of wind farms?

### **Solar power plants**

Whereas a full investigation of the suggested link between wind farms and cyclones could be carried out using conventional scientific methods, only spiritual science can really inform us about the effects of photovoltaic solar cells. Let us turn first to what Rudolf Steiner described in connection with the Sun-Initiation of the ancient Druid priests, during the Summer School in Penmaenmawr in August 1923. He spoke in a remarkable way of the spiritual forces that stream down to Earth in the physical sunlight, and how these spiritual forces pass through the stones of the Druids' initiation chambers and cromlechs. The outer, physical light is held back by the stones, but the soul and spirit forces of the Sun pass through, and the initiated Druid priest was able to perceive them. These soul and spirit forces stream down through the stones into the earth, and in the evening, when the Sun no longer shines, answering forces flow up from the ground - forces of a moral nature.

Rudolf Steiner then described how in circles of standing stones, the spirit and soul forces from the Sun differed

in the shadows thrown by the successive stones of the circle, depending on which constellation was behind the Sun when its rays fell on the particular stone. He spoke of Aries-shadows, Taurus-shadows, Gemini-shadows and so on. In these qualitatively different shadows the Druid priest could read the secrets of the starry worlds.

Now the bluestone, sandstone or granite rocks of the Druids' circles are rich in silicon, the element from which the majority of solar cells are fabricated. It is above all the silicon in the stones - often in the form of silica (i.e. silicon dioxide,  $\text{SiO}_2$ ) - that is transparent to the divine spiritual and soul forces of the constellations working through the Sun. This is true not only of standing stones, of course: it is a property of the whole layer of siliceous stone in the Earth's crust, be it solid rock, stones, gravel, sand or still finer particles. Rudolf Steiner later spoke in some detail of the spiritual properties of silicon, in the lectures of the Agricultural Course in Koberwitz in June 1924.

To go into those spiritual qualities of siliceous matter would take us beyond the scope of this article. I will simply draw attention here to one of its important properties, which I will describe in spiritual scientific terms. Just as the air of the Earth's atmosphere, which does not conduct electricity, holds back the cosmic electricity from streaming down into the Earth, so does the layer of siliceous stone, which acts as an insulator, hold back the earthly electricity that would radiate out into cosmic space. Cosmic electricity, which we designate as positive in polarity, has a more Luciferic nature, whereas terrestrial electricity - negative electricity -, which radiates up from deep layers inside the Earth, has Ahrimanic properties. Both are held back from the biosphere - and are held in balance, so to say, - by the insulating properties of the siliceous stone in the Earth's crust and by the air. It is this holding back of electricity, of the death-force, which enables life to unfold so fully in the biosphere (the life-sphere).

Not all of the natural electricity is screened out by the air and the siliceous rock, of course. A certain amount - the right amount for the evolution of human beings and Nature's other living creatures - does enter the biosphere and flows through it. This small flow of electricity is known as the vertical current. True, the cosmic-earthly electric field is everywhere immanent as potential force, but apart from the vertical current it enters into outer activity in the biosphere only in localized occurrences such as lightning and the aurora borealis, or when human beings create conditions that overcome the resistance of the air or the siliceous layer, as in the case of batteries, for instance, and in semiconductors. A battery does not

generate electricity; it draws electricity from the all-pervading field. We understand electrical processes only when we bear in mind that they are wholly dependent on the cosmic-earthly field, just as the orientation of a magnetic compass needle is dependent on the Earth's magnetic field. Modern science gazes down into the atom and seeks to find the cause of electrical processes in the movements of subatomic particles. In so doing it tends to lose sight of the fact that the electrical action of subatomic particles occurs only because they exist within, and are part of, the great cosmo-telluric electric field. It is the field that is acting through the particles.

Pure silicon, extracted from siliceous stone, is a semiconductor: an insulator, the electrical properties of which can be changed into those of a conductor by "doping" it with minute amounts of certain impurities. These latter, which are introduced into silicon crystals in homeopathic quantities, are of two kinds. The first kind lowers the silicon's resistance to electricity in one way, bringing it into connection with cosmic electricity; the other kind brings it into connection with terrestrial electricity. The most widely used semiconducting component of electronics, the silicon transistor (transfer resistor) is so named because of the changes brought about in its resistance. One half of the transistor is doped in one way, the other half in the other way. An extremely thin layer of crystal separates the part open to cosmic electricity from the part open to earthly electricity. By manipulating the resistance of this layer electrically, a current can be allowed to flow from the cosmic to the earthly side and vice versa, or the flow can be stopped. The transistor can thus be employed as a switch, electronically switching the flow of current on or off, and this is the capacity in which it is used in computers. A modern personal computer contains many millions of transistors.

Essentially a solar cell is like a large transistor. It is a slice of silicon crystal doped to make it open on one side to earthly electricity and on the other to cosmic electricity. The action of sunlight is employed to alter the resistance of the separating layer, causing electricity to flow. The sunlight is not converted into electricity, as is commonly supposed. The electricity flows into the crystal from the cosmo-telluric field. Most solar cells measure a few square centimetres in area and are protected from the natural environment by a thin coating of glass or of a transparent plastic material. Theirs is an inefficient technology; in full sunlight a typical cell can draw only a small amount of electricity from the electric field (about two watts). In photovoltaic solar panels, therefore,

large numbers of solar cells are wired together in order to combine the current flowing through each one of them.

What becomes of the spirit and soul forces of the Sun when the physical sunlight is held back not by standing stones but by solar panels? To answer this question we must recall what Rudolf Steiner said about the qualitative nature of the electrical force. It is a force which, in very ancient times, worked in a moral way. But over long ages it changed, becoming less and less moral until, in our own epoch, it has become what Rudolf Steiner called "the bearer of the instinct of evil". I would add that this is particularly the character of the negative electricity radiating up from the interior of the Earth - from the regions Steiner called the evil counterparts of the Astral world and Devachan. Unlike positive electricity, negative electricity is inseparably bound up with the magnetic force.

When sunlight falls on a solar panel the crystalline structure of the solar cells instantly becomes suffused with electricity radiating upward from the Earth and streaming downward from the Cosmos. The spirit and soul forces of the Sun are caught up in this flux of death-forces and can no longer stream down onto the Earth in the usual way. In the shadow thrown by a solar panel it is not the divine forces of the stars that are active, but the evil forces of the sub-earthly realms.

In this domain blunders can easily be made, unwittingly, by well-intentioned people. A short time ago I received by post some publicity from an anthroposophical banking institution encouraging clients to invest in "green" energy. As an example of an initiative worthy of support they proposed a project to install solar panels on the roof of a school. Heaven forbid! I can hardly imagine anything more damaging to the children's souls than to place their classrooms in the shadow of solar panels.

### **A grotesque situation**

Aside from the fact that electricity is the wrong kind of energy for us, why do we need so much of it anyway? Why, for example, does the long-suffering private citizen have to save electricity by using unwholesome LED lighting in his home in place of the traditional incandescent light bulbs?

The answer to this question reveals a situation so grotesque that it hardly seems possible. I will illustrate it by an example. Internet users rely on service providers such as Google, Yahoo etc. to find information for them and, increasingly, to store their own personal information for them. When they launch searches, they want answers

straight away, and when they wish to view their personal information they want instant access to it.

But where is all that information stored - all those trillions of gigabytes of electronic data? It is stored in vast computer centres, many of which also provide search engines and other services: a colossal network of data centres that is the physical embodiment of the World Wide Web. Stupendous amounts of data are moved daily from centre to centre as people download music and movies, buy products on Amazon, check their bank balances, send e-mails with photos attached and so on. To the end-users it seems so simple - a mere click or two - yet very few have any inkling of the sheer volume of the information and the complexity of the sequences of operations set in motion by those clicks. The data centres contain rows upon rows of computers, sometimes covering an area the size of a small village and all consuming electricity. The biggest data centres can use as much electricity as a medium-sized town ... and there are tens of thousands of them.

So should we imagine that all those millions of computers are working away busily, doing Internet searches and giving customers access to their private information? No. Far from it! Most of them are not carrying out any tasks at all. But they are all running, their hard disks spinning, twenty-four hours a day, seven days a week. In fact, the average use of the computing power of data centres is between 6 and 12 percent. All the rest of the computers, 88 to 94 percent of the total number, are just idling. They are there just in case they might possibly be needed sometime.

These facts and figures were ascertained in a detailed, year-long investigation carried out by the New York Times and published on 23 September 2012. The investigation was a difficult one - the locations of the data centres are secret and there is no access for the public. The picture that emerged from the investigation was astounding.

Data centres worldwide consume about 30 billion watts of electricity. Nine tenths of it is used up by the idling computers, and by the gigantic cooling systems, back-up generators, stabilizers, switch-gear and all the rest of the complex infrastructure. Of the 30 billion watts consumed, as little as 1 billion may be for actual computing and data processing. The rest simply ends up being turned into heat and vented into the atmosphere, contributing to global warming. It is a sobering thought that the total power output of all the wind turbines that blight Britain's countryside and spoil her coastal waters would fall far short of the energy consumption that is being senselessly wasted

day in, day out, by the millions of idling computers in data centres.

Any interruption of the electricity supply to these monstrous outgrowths of digital electronics would be disastrous: searches would grind to a halt and people might have to wait for access to their personal data. So the data centres have their own emergency power supplies, which often consist of row upon row of big, old-fashioned diesel generators. These have to be tested daily to ensure that they will spring into action instantly, to back up the huge banks of emergency batteries if the current from the grid fails even for a fraction of a second. The diesel smoke from all these thousands of generators adds heavily to the carbon footprint of this shockingly inefficient industry.

Why do Google, Yahoo, Facebook and Co. need all those superfluous computers? It is the customers' fault of course, says the data industry. People want to have access to everything, immediately. Thus the need for immense reserves of standby capacity. Greedy customers! Google and Co refrain from adding that it is they themselves who have deliberately fostered this consumer mentality. And so at every moment of the day and night a quantity of electricity equal to the total output of 29 nuclear power-stations is burnt up, and the resulting heat vented into the atmosphere, by computers doing nothing. Examples such as this - and there are others - reveal the extraordinary imbalance that computer technology has brought about in modern civilization. Much of the domestic electrical consumption in Britain would be covered by the electricity uselessly squandered by data centres. But no: the data centres are allowed to squander all they want. Meanwhile the ordinary citizen is not permitted to use decent light-bulbs anymore because "they waste electricity".

### **Truly green technology**

Many people use electric lighting, electric heating, an electric cooker, refrigerator, toaster, kettle, mixer, washing machine, air-conditioner, vacuum cleaner, radio, hi-fi, television, camera, computer, hand tools, machine-tools etc., etc... If and when electric vehicles finally replace petrol and diesel powered transport, most human beings will then find themselves living in a virtually all-electric urban environment. We are so accustomed to all these electrical appliances that we take them for granted, as though they were perfectly normal. The idea that we should perhaps not be using electricity at all probably never crosses most peoples' minds.

What did Rudolf Steiner have to say about all this? The answer has been mentioned already. He said, and he

repeated, that the use of electricity would destroy humanity. He did not say "it might..." or "there is a risk that...". The use of electricity will destroy humanity. Full stop.

But it is essential that part of humanity survive. Human evolution must not be wiped out completely. There must be human beings who will evolve beyond the post-Atlantean epochs, through the sixth and seventh ages of the Earth, and then on to Jupiter, Venus and Vulcan. This part of humanity needs technology that does not use the death-force of electricity. When Rudolf Steiner spoke of the new forms of technology we should be developing today for the future, he described technologies that do not employ electricity. They use etheric forces. They are the truly green technologies. Steiner was not describing dreamy visions of a world beyond our reach. He was talking about the normal evolution of technology in the twentieth century and thereafter. Our all-electric world is not normal. It is an aberration.

Many years ago I began writing a book I called *Machines and the Human Spirit*. I write very slowly because I feel the need to put my statements to the test again and again, and to make absolutely sure of the facts I present. Over the years the book has evolved and changed. The version now in print is leaner, clearer and more concrete. I have written it for everyone who is interested in humanity's future. It is also intended to encourage active readers to involve themselves in developing the good, new technologies described in it. Dear Friends, let us recognize conventional "green" technologies for what they are. And let us put our hearts and minds into developing what humanity really does need: etheric technology - the technology that is truly green.

*Paul Emberson*

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# The Spiritual Calendar or: how one becomes a real contemporary

*The following is a slightly edited extract from Thomas Meyer's lecture of 6 February 2016, held at a pedagogical conference in Hamburg Nienstedten; the conference was titled "What To Do? Waldorf Schools in Contemporary Society"*

## The Spiritual Calendar and 6 February

Ladies and gentlemen,

I would like to present my sketchy remarks under the title "The Spiritual Calendar". They will not be about a normal calendar, nor about the calendar produced by Perseus Verlag, which also includes the weekly verses and important indications of karma by Rudolf Steiner. What is meant here is an inner calendar, in which the most important spiritual events since the year 1879, the beginning of the Age of Michael are indicated. There are five such events, which are connected with the following dates: 1879, 1899, 1933, 1998 and "now".<sup>1</sup> This calendar, which naturally will be continued into the future, is a necessary extension of the conventional calendar, in which we note our daily events and engagements. But someone who does not know or take note of the spiritual calendar beyond this, will hardly be able to become a contemporary in the fullest sense of the word.

Today is a day to commemorate an important historical event, which invites us to contemplate spiritual history and contemporary affairs: it is the day of the burning of Ephesus in 356 BC and also the day of the birth of Alexander the Great. The catastrophe of the fire at Ephesus was the stimulus for Aristotle to transform the old Imagination and Inspiration of the ancient Mysteries into the form of abstract concepts. That fateful night thus also became the moment of the birth of the Aristotelian Categories.

Furthermore, we remember today the birth of Walter Johannes Stein in 1891. Stein was a significant pupil of Steiner. He belonged to the first circle of teachers at the Waldorf School, where he taught history – and he inspired Johannes Tautz, the first history teacher after the reopening of the Stuttgart School after the Second World War. I had the good fortune to meet Tautz and to discuss with him the publication of Helmuth von Moltke's after-death communications, which were recorded by Rudolf Steiner. These communications are, as it were, like the beginning of a spiritual reflection on history and current events, such as we shall be concerned with this evening. They

deal with almost all the five events I referred to earlier since the onset of the Age of Michael in the year 1879. This is what I wanted to say in relation to this particular day.

## The slogan "conspiracy theory"

Before this conference I came across a document that has been circulated by the League of Free Waldorf Schools here in Hamburg. It has to do with a call to Waldorf Schools not to invite any kind of "conspiracy theorists" to give lectures at their schools; the pupils might become confused or radicalised. As an example, Ken Jebsen was mentioned, a former Waldorf pupil from Überlingen, who has put on *Youtube* a number of interviews about current events with prominent people in alternative circles, for example, interviews with Willy Wimmer or Gerhard Wisniewski. The written warning was followed by an exchange of letters between Henning Kullak-Ublick, the author of the League's official circular, and various teachers, who were very critical of this categorical warning. In Kullak-Ublick's letter the expressions "conspiracy theory", "conspiracist", and "conspiracy theorist" are used several times. This was allegedly due to concerns about, and also growing criticism of, the "transatlantic alliance" etc.

You see, in this circular "things" appear, which in a free anthroposophical spiritual life would not appear, as they would have nothing to seek there. By these "things" I mean slogans. Slogans have nothing to do with knowledge; rather, they are suitable for dulling or distracting the impulse for knowledge. A particularly bad slogan is that of "conspiracy theory". Today, it is today almost as bad to call someone a "conspiracy theorist" as it is to pin on him the label of "anti-semitic", "racist", "far right extremist", accusations which were even made against Rudolf Steiner and still are today. The slogan "conspiracy theory" is naturally not limited to this circular. A very well-known German politician, who was once Minister of the Interior, defended RAF<sup>2</sup> terrorists in Stammheim and was sympathetic to the ideas of threefolding, was once asked by friends of mine what he thought of Steiner's *Karma of Untruthfulness* lectures with their indications about

<sup>1</sup> See the author's book *In The Sign of Five – The Five Spiritual Events, tasks and beings of the First Half of the Age of Michael – An Apocalyptic View of Contemporary History*, Forest Row, 2015.

<sup>2</sup> RAF = Red Army Faction, left-wing urban guerrillas in Germany in the 1970s and 80s

the activities and effects of secret lodges. His answer was: "Oh, conspiracy theories!" *Der Europäer* too has repeatedly had the dubious distinction of having this slogan thrown at it. Not least from entries on a certain Waldorf blog!<sup>3</sup>

### The assassination of John F. Kennedy

Where and by whom was this slogan created? This poisonous weapon that is used against people who do not unquestioningly accept what they are told by the mainstream media? I would like to give you a brief insight into the origins of this expression.

I have to go back to an event that affected me deeply as a young thirteen year-old. The radio reported that John F. Kennedy had been murdered in Dallas, Texas. It was the 22 November 1963. I was at the age at which one begins to make one's own judgments. I could not do that at that time in relation to the Kennedy assassination, but the feeling remained with me that this was an important event. As with the attack on Pearl Harbor in 1941, after the assassination an investigative commission was appointed. The same thing happened after 9/11. Such commissions have the task of telling people what to think about the facts of the case in question. There are no investigative commissions which are led by a will to understand. After Pearl Harbor, people were supposed to believe that the Japanese had launched an insidious surprise attack on Hawaii, although the Roosevelt Administration was anything but surprised. After 9/11 the world was supposed to believe that Islamists had organised the attacks out of hatred and envy of western "freedoms". We were supposed to believe that Kennedy was killed by a single disturbed assassin, Lee Harvey Oswald. A leading member of the Warren Commission that was intended to explain the murder was Alan Dulles, the former head of the CIA, who had earlier been sacked by Kennedy. Kennedy wanted to break the power of the secret services, he wanted to break the power of the Federal Reserve – a committee of private bankers; he wanted to break the power of the military-industrial complex, which was pressing for further US engagement in Vietnam. And in the Cuban missile crisis, which brought the world to the brink of an atomic war, he came to an agreement in a very independent manner with the Russian leader Khrushchev. Today the facts of the assassination have been more or less clarified. It was a case of a well-disguised, actual conspiracy involving the CIA, high-up military officers and the Mafia.

In a word - it was a coup d'état.<sup>4</sup>

### How the Kennedy conspirators created the expression "conspiracy theorist"

After the publication of the Warren Commission Report, doubts arose in some readers about the theory of the lone assassin. In articles and books the probability was discussed of a conspiracy involving numerous people. After a while, some inside the CIA became seriously concerned that the American population had smelled a rat and might be able to track down the real facts of the matter. In the second half of the 1960s an internal CIA document went around that advised how the "conspiracy theorists" could be rendered harmless through a campaign of defamation. This was the origin of the slogan "conspiracy theory". The expression therefore actually stems from the circles of the "successful" conspirers against John F. Kennedy. It is thus an expression of the greatest mendacity and necessarily works to suppress and indeed poison knowledge. And it is still doing so to this day. An anthroposopher of the Age of Michael has the duty to track slogans such as this to their roots. Otherwise, he makes himself – whether he wishes to or not – an accomplice in further poisonous and infectious effects that stem from this slogan.

### Recommended unreason

This can also happen by recommending certain literature and keeping silent about others. It happened when Herr Kullak-Ublick, who in one of his replies recommended a book by one Karl Hepfer with the title: *Verschwörungstheorien – Eine philosophische Kritik der Unvernunft*. [Conspiracy Theories - A Philosophical Critique of Unreason]. Hepfer manages to present a series of murder cases or assassinations, including the Kennedy assassination and 9/11, without mentioning a single critical investigation or its author(s), but he only discusses "conspiracy theories" about them in his own words, in order to criticise them. That has nothing at all to do with science, and even less with philosophy. One sees the intention: to distract readers from the study of critical sources by designating them categorically as "conspiracy theories".

Furthermore, where there were or are actual conspiracies, one of course needs corresponding evidence-based theories that explain these conspiracies. The expression can thus also be used in the quite neutral sense of a task of knowledge. That there can also be false or dilettantish theories, or theories of *suspected* conspiracies, hardly needs to be mentioned. What is bad about the normal use of this expression is that it has affected many people in such a way that to speak of conspiracy is generally regarded as "unreason", to use Hepfer's expression.

<sup>3</sup> <https://waldorfblog.wordpress.com/category/der-europaer-zeitschrift/>

<sup>4</sup> See James W. Douglass, *JFK and the Unspeakable*, New York 2008.

A similar poisonous effect stems from another non-concept, to which many people give voice today. In order to cement a negative image of the present Russian President, those who do not accept this image unquestioningly – they don't have to regard Putin as a saint – are ironically termed [in German] “those who understand Putin” [Putin-Versteher] – as if understanding could ever be seen as something negative. Or we can take expressions such as “Far Right”, or “right-wing anthroposophical”, which is a slogan that has also been thrown at the magazine *Der Europäer* on the Waldorf blog (!) I mentioned earlier, even though it corresponds to nothing real.

### Thinking beyond words – a call of Michael

From these initial thoughts the question arises: how much do anthroposophers too, even the well-meaning ones, think in words or even in slogans? With this question I'd like to refer to a call by Michael which seems to me to be of special relevance today. It also circumscribes something of the *first* event in our spiritual calendar.

In Steiner's book *The Philosophy of Spiritual Activity* a clear distinction is made between: thinking, concept, word. The essential is, of course, thinking. This forms concepts, and concepts can be clothed in words. Words are the clothing of concepts. There can be different words for one and the same concept. On the other hand: one and the same word can clothe different concepts. But people think too much merely in words and give them too much weight. What matters is not what one calls something, but how one thinks. Let's take the word “Michael”. One can with good reason claim that the book *The Philosophy of Spiritual Activity* is a Michaelic book. Perhaps someone goes to the computer and looks through the whole GA for the word “Michael”. Many results will be shown in numerous lectures. Only a few in the books; and most of all in the Leading Thoughts.

In *The Philosophy of Spiritual Activity*, however, there is no “Michael” to be found. Then someone might say: “Your claim is false. There is no Michael in the book!” That's true, the *word* Michael is not there. We are looking at a very elementary phase of anthroposophical, spiritual scientific schooling here: the call to go beyond thinking in words. Every teacher, indeed, everyone who wants to be anthroposophically active should strive to get beyond thinking in words – one should perhaps say rather: to go beyond depending on words. It is already questionable enough, when this is not striven for. But it is worse when one resorts to slogans and is satisfied with them. Especially, when they are poisonous in the way that the word I discussed earlier is. “Anthroposophy is a path of knowledge...”, says Steiner

in his last book, where Michael is often mentioned, and in which *The Philosophy of Spiritual Activity* is the only other book to which he refers. The beginning and the end of his published work join hands. Anthroposophy as a path of knowledge is not a path of words and even less a path of slogans. It is a Michael Path, indeed, the Michael Path of the Time Spirit's epoch that began in 1879.

In closing this introduction, I'd like to quote a short passage from a lecture which Rudolf Steiner gave after the Christmas Conference, on 13 January 1924 (GA 233a). He speaks there about the relationship of the human being to language: “The liveliest spiritual struggle is going on today because of the notion that has been poured out over a large portion of humanity that it is not thoughts that exist but that people *think in words*.” He is not talking about slogans here. That would be a stage lower. And again: “But to think in words like this is no way to Michael. One comes to Michael only when one penetrates through the words to true inner spiritual experiences, when one does not depend on words, but comes to true inner spiritual experiences. That is actually the secret of modern initiation: to go beyond words to the experience of the spirit.” And then comes a noteworthy remark about the relationship to language, about something that occurs when one does get beyond language, paradoxical as it may at first sound. “Nothing is meant by this which is contrary to the sense for beauty in language. For it is precisely when one is no longer thinking in language that one begins to feel the language and to have it stream within oneself and from oneself as an element of feeling.”

So, what to do then in Waldorf Schools in relation to current events in order to engage with the title of this conference? First and foremost is to develop the will to get beyond thinking in words and especially beyond slogans.

T.H. Meyer