

Rudolf Steiner on Technology. A Review¹

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Summary. This review examines what Paul Emberson has recently published on the theme of modern technology. It is intended neither as a polemic, nor as an attempt to refute or falsify his comments. We are fully aware that Paul Emberson and his colleagues have worked on this theme for many years, and thus know the relevant literature. Instead, this review aims to enable readers to gain an initial thorough overview of the theme. In addition, we shall not hide the fact that, after several months of study in the Mathematical-Astronomical Section at the Goetheanum of Paul Emberson's statements, we cannot go along with some of the points he makes. Furthermore, after attempting to correspond with him and visit him personally, these unresolved questions still await clarification. The impression remains that in order to be able to follow Paul Emberson on all points, one has, in a certain sense, to recognise him as an authority. His involvement over many years with technology and Rudolf Steiner's work might give rise to such confidence in him. Moreover, Paul Emberson presents some of his views as not exclusively his own observations, but refers them to another authority, namely that of Rudolf Steiner, whom many already regard as trustworthy. When it turns out to be impossible to trace where a particular statement of Rudolf Steiner is supposed to have come from, various people associated with the Goetheanum feel obliged to make this clear, and bring this to the attention of people who, having questions about Paul Emberson's comments, have referred them to those responsible at the Goetheanum. Furthermore, the Goetheanum still genuinely wishes to communicate with Paul Emberson and Anthro-Tech, but in the past months this has unfortunately been met with a wall of silence.

Keywords. Technology, Anthro-Tech Institute, Paul Emberson, John Worrell Keely

The work in the Mathematical-Astronomical Section on PAUL EMBERSON's views was triggered by his publication in Winter 2009 of *Anthro-Tech News* No. 10 [4, German edition]². At the beginning it describes the progress so far of research on a new kind of technology, for which the Anthro-Tech Institute was founded about 20 years ago. Rudolf Steiner's lectures contain indications about this kind of technology. Here, we shall first provide a brief overview. In doing so, we are aware that it is really absurd to take individ-

¹Translated from [7].

²The English edition of [4] is [5]. It is shorter. For example, there is no mention of the progress of Anthro-Tech research at the beginning of [5, English edition].

ual passages of Rudolf Steiner's lectures out of the context of the whole lecture or even out of the whole lecture cycle, and try to make something from them in their own right. We have therefore decided at least always to cite larger meaningful contexts from the lectures, instead of giving merely individual sentences. Moreover, we recommend that, to arrive at their own conclusions, readers should make their own study of the full texts, whose sources are given at the end of this article.

In January 1906 Rudolf Steiner, speaking on the significance of the Tau sign in Freemasonry, said that this is an expression of a driving force

which can only be set in motion by the power of selfless love. It will be possible to use this power to drive machines, which will, however, cease to function if egoistical people make use of them. It is perhaps known to you that Keely invented a motor which would only go if he himself were present. He was not deceiving people about this; for he had in him that driving force originating in the soul, which can set machines in motion. A driving force which can only be moral, that is the idea of the future; a most important force, with which culture must be inoculated, if it is not to fall back on itself. The mechanical and the moral must interpenetrate each other, because the mechanical is nothing without the moral. Today we stand hard on this frontier. In the future machines will be driven not only by water and steam, but by spiritual force, by spiritual morality. [39, Berlin, 2 January 1906, p. 312]

The American inventor, JOHN WORRELL KEELY, referred to here by Steiner, was frequently mentioned by him in connection with this new technology. Therefore, I will summarise the essential points about him here: Keely lived in the 19th century between 1827 and 1898. He became famous for stating that he had developed a mechanism (the Keely motor) that was driven by a previously unknown force. Basically it was supposed to create pressure in a closed container of water. Eye-witnesses reported on successful demonstrations of the motor. But after setting up a company for funding its further development and application, Keely was unable to produce any results that would have satisfied his funders. After his death, a hidden apparatus was found which made it possible for him to feign the function of his motor. Thus many today assume that Keely was a fraud. Others suspect a conspiracy that aimed to prevent this new kind of energy production. Alternatively, it is suggested that, as the ability to set the motor in motion was connected with Keely in person, and was at only his disposal, it would not have been possible to make it generally applicable. Further possible explanations exist that claim that Keely could not succeed because he wanted to apply the technology that he discovered in commercial or military purposes, which would not have accorded with the (higher) nature of this technology.

As the quote cited above shows, Rudolf Steiner was convinced that the Keely motor had worked, albeit only when Keely himself was present. In a lecture in February 1906 Rudolf Steiner said:

Today we have come down to the physical level in every respect. If there is no moral development to go hand in hand with civilization at the physical level, physical achievements are destructive. Moral development will enable humanity to generate energies that will be very different from those that are

now to be found at the physical level. Keely set his engine in motion with vibrations created in his own organism. Such vibrations depend on a person's moral nature. This is the first hint of a dawn for a technology of the future. We will have engines in future that are only set going by energies coming from people who have moral qualities. Immoral people will not be able to set them going. Purely mechanical mechanism must be transformed into moral mechanism. [52, Cologne, 12 February 1906, p. 29f]

A further reference occurs in a lecture in June 1916:

Some years ago, this phenomenon appeared in America with the emergence of the polar opposite to Tolstoy, namely, Keely. Keely harbored the ideal of building a motor that would not run on steam or electricity, but on the waves we create when we make sounds, when we speak. Just imagine that! A motor that runs on the waves we set in motion when we speak, or indeed with our inner life in general! Of course, this was only an ideal, and we can thank God it was only an ideal at that time, for what would this war be like if Keely's ideal had been realized? If it is ever realized, then we will see what the harmony of vibrations in external motor power really means. [43, Berlin, 20 June 1916, p. 58]

And finally Keely was mentioned once again in November 1920, when Rudolf Steiner was also speaking of the rise of that new kind of technology:

It has to be clearly understood that Western culture is in its initial stages. We can see that this is most immediately apparent at the point where economic processes sprout from technological processes, if I may put it like this. A very typical example is the ideal once conceived by an American, an ideal that is bound to come to realization in the West one day. It is a purely ahrimanic ideal but one of high ideality. It consists of using the vibrations generated in the human organism, studying them in great detail and applying them to machines to the effect that if someone stood by a machine, even his smallest vibrations would be intensified in that machine. The vibrations of human nerves would be transferred to the machine. Think of the Keely engine. It did not succeed at the first attempt because it had been largely developed from instinct, but it is something that will certainly be realized one day. Here something arises from the crude mechanistic material world that points to what is to come — material mechanics linking up with immaterial, spiritual elements. [41, Stuttgart, 8 November 1920, p. 132]

In this quote we can see the reason for the non-functioning of the Keely motor, namely that it is still too strongly developed out of mere instinct. What is to be understood by that cannot be established conclusively from this lecture by Rudolf Steiner alone. It could possibly have just meant that the faculty for which Keely would have to be regarded as a herald, so to speak, was present in him not fully consciously, and was thus only instinctive. These capacities that can be attributed to Keely probably belong to what Rudolf Steiner referred to in other places as material or mechanical occultism. In this passage,

by <Western culture> being in its <initial stages>, he possibly meant precisely this. For, according to Rudolf Steiner, it is in the West that mechanical occultism would develop in future, i. e. among the English-speaking peoples. In December 1918 Rudolf Steiner gave detailed information about this, which, to cite in its entirety would be beyond the scope of this article. He spoke there of a threefold capacity that is to be developed in the human being. For, besides this mechanical occultism that is to be developed in the West, there is a second that would be developed by people of the East, which he called eugenic occultism. The third capacity to be developed, the appropriate disposition for which is found particularly in the peoples in between, he called hygienic occultism. The eugenic faculty he described as insights into human reproduction, the hygienic as medical insights. As important as it may be for us to deal in depth with these two additional capacities, and examine their connection with the mechanical capacity, we cannot discuss them further in the context of the present theme. For this reason only a small extract is quoted in which mechanical occultism is discussed and which contains descriptions of this new kind of technology:

This threefold capacity, of which every knowing person within these secret circles speaks — these three capacities that will evolve in human nature — I must make intelligible to you in the following way. First there are the capacities having to do with so-called material occultism. By means of this capacity — and this is precisely the ideal of the British secret societies — certain social forms at present basic within the industrial system shall be set up on an entirely different foundation. Every knowing member of these secret circles is aware that, solely by means of certain capacities which are still latent in man but which are evolving, and with the help of the law of harmonious oscillations, machines and mechanical constructions and other things can be set in motion. A small indication is to be found in what I connected with the person of Strader in my Mystery Dramas.

These things are at present in process of development. They are guarded as secrets within those secret circles in the field of material occultism. There are motors which can be set in motion, into activity, by an insignificant human influence through a knowledge of the corresponding curve of oscillation. By means of this principle it will be possible to substitute merely mechanical forces for human forces in very many things. The number of human beings on the earth today in actual fact is 1,400,000,000. Labor is performed, however, not only by these 1,400,000,000 persons — as I explained here once — but so much labor is performed in a purely mechanical way that we may say the earth is really inhabited by 2,000,000,000 persons. The others are simply machines. That is, if the work which is done by machines had to be done by human beings without machines, it would be necessary to have 600,000,000 more persons on earth. But, if what I am now discussing with you under the name of mechanistic occultism enters into the field of practical action — which is the ideal of those secret centers — it will be possible to accomplish the work not only of 500,000,000 or 600,000,000 but of 1,080,000,000 persons. The possibility will thus come about of rendering un-

necessary nine-tenths of the work of human beings within the regions of the English-speaking peoples. But mechanistic occultism will not only render it possible to do without nine-tenths of the labor still performed at present by human hands, but will give the possibility also of paralyzing every uprising attempted by the dissatisfied masses of humanity.

The capacity to set motors in motion according to the laws of reciprocal oscillations will develop on a great scale among the English-speaking peoples. This is known in those secret circles. This is counted upon as the means whereby the mastery over the rest of the population of the earth shall be achieved even in the course of the Fifth Post-Atlantean Epoch. [23, Dornach, 1 December 1918, p. 53f]

Here, Rudolf Steiner refers to the character Strader in his Mystery Dramas published 1910-1913. Therefore a short digression is called for to shed more light on Strader, and his connection with this new kind of technology, and possibly also on John Worrell Keely. During the course of the action of the dramas Strader discovers a machine (the Strader machine), which promises a novel technology. In the first scene of the third Drama, originally published in 1912, the characters say the following:

Maria Treufels:

There must be many changes in our time
 in souls who try to follow
 the purpose of man's history on earth.
 Many sure signs of this can be observed.
 But little indicates that mystic ways
 lead to those aims which bring
 strong power to men's souls.
 It seems to me our time needs leaders
 who when they use their natural gifts
 combine their genius with dexterity,
 and so can feel their usefulness
 within the world, in earthly work.
 Such men can give, even to spiritual deeds,
 roots in the soil of true reality,
 and so can follow, free from all illusion,
 the path that brings wellbeing to the world.
 Holding to this conviction, I can see powers in Dr. Strader
 more fitted to lead souls
 than those the mystic brotherhood possesses.
 Long have we felt with pain
 the wonderful achievements of technology
 binding in many ways the human soul's free spirit.
 But there is now a hope
 of which no-one could dream before.
 In Strader's workshop there exist

in miniature already the inventions
 at work, which soon will change
 on a great scale, the field of industry,
 and take away the heavy loads
 which burden still so many souls.

Strader:

Words full of hope have just been spoken
 about the work, in which I seem
 to have succeeded. There is still indeed
 the bridge to cross, between experiment
 and application — but in theory
 it all seems practicable.
 Perhaps you will allow the inventor
 to state here frankly his opinion
 about his work. Forgive my words
 which may seem lacking in humility
 to some — but they describe the feelings
 which have sustained me in my work.
 Man's history shows that every kind of labour
 becomes detached from feeling
 and from the human soul — and changes
 into a soulless thing, the more
 the spirit learns to master forces
 which it can find within the senses' realm.
 Each day productive work grows more mechanical —
 and so does life itself.
 Many proposals carefully thought out
 have been put forward to prevent
 that the cold working methods of technology
 cripple the human soul, and the true purposes
 of spirit . . . Through such efforts
 little has been achieved; they always took
 as the main question, what the attitude
 of men to men should be. I too have spent
 many an earnest hour pondering
 this riddle — but I always found
 that the results were valueless in life.
 And I began to feel myself approaching
 the tragic view that it is fated,
 by the world's destiny, that every triumph
 over the realm of matter must prove hostile
 to spiritual progress.

What seemed a chance event has brought release
for me, from baffled thought.
I had to do experiments
which were remote indeed from all these questions;
and suddenly ideas arose
which showed me the right way.
A sequence of experiments at last
led on my work-bench to a harmony
of forces, which, developed fully,
will bring about the freedom that souls need,
simply as consequence of new techniques.
No longer will men have to be compelled
to dream away their lives unworthily
like plants, in some cramped factory.
The powers of technology
will be distributed in such a way
that every man can use with ease
what he requires for work
in his own home, which he has shaped himself.
[35, p. 256f]

However, in the fourth drama first published in the August of the following year, 1913, Strader appears to have difficulties in the application of his machine. This shows in the first scene during a conversation between Hilary Gottgetreu and his business manager as follows:

Hilary:

My friend, you know I'm not a dreamer.
I would never have set myself such high aims,
had not a good star brought to me
someone who will make real my aspirations.
And I'm quite amazed you haven't seen
that Strader is the man.
One who has come to know him in his deepest being,
and who has a sense for highest human dignity,
should not be called a dreamer,
if he feels obliged to take upon himself
the task of creating for this man a field of work.

Manager (surprised):

You expect me to believe that Strader is the one?
Is he not a living example of how human thinking can go astray

when it loses its grasp of reality?
 That his machine originated in genuine spiritual inspiration —
 I do not doubt.
 And if one day it can be realized,
 then it'll certainly have the good effects
 which Strader prematurely hoped it would.
 But for a long time it will remain only a model,
 because the forces which he needs to make it work
 have not yet been discovered.
 It saddens me that you could think
 that any good would ever come from entrusting your work
 to this man.
 Hasn't he just gone completely off the rails with this daring
 invention of his?
 No doubt his work led him into lofty heights of thought;
 these always will entice the human mind.
 But we should only attempt to scale these heights,
 when we have found the necessary strength.

Hilary:

But see! You've had to praise the man
 while seeking reasons to dismiss him.
 This only affirms to me his worth.
 According to your own words, it was not *his* fault
 that his invention didn't succeed.
 Surely, therefore, this community of ours,
 where nothing from outside can hinder him,
 is the right place for him to be.
 [47, p. 4f]

Whereas here the question remains open as to whether Strader's machine does not work because of external circumstances, towards the end of the fourth drama through the character of Ferdinand Reinecke it is revealed that there is already an error in the principle of the machine. Reinecke is inspired in this by the adversarial spirit-being Ahriman:

Ahriman:

Do you know Dr Strader my servant?

Ferdinand Reinecke's Soul:

He struts about up there on that earth-star.
 Out of his learned drivel, he attempts

to build up structures that can stand in life —
 but every puff of real life blows them down.
 He greedily laps up anything those mystic windbags care to utter.
 He's already almost suffocating in their fumes.
 And now he's trying to spread his fog around Hilary as well,
 whose Manager, however, keeps him well in check,
 because otherwise that bunch of lying toads
 would utterly destroy the reputation of
 his firm with all their spiritual hogwash.

Ahriman:

Such prattle will get us nowhere!
Strader is the man I need.
 So long as he can maintain faith in himself,
 it will be far too easy for Benedictus to succeed
 in bringing out his teaching to humanity.
 The Manager may well be serving *Lucifer* —
 I've got to go about things differently.
 Through *Strader* I must damage Benedictus.
 For Benedictus and his other pupils will
 achieve nothing without *Strader*.
 Admittedly, my opponents still have the upper hand.
 When *Strader* dies, they'll have him for themselves.
 But if, whilst he is still alive on earth,
 I manage to confuse his soul
 and make him doubt himself,
 then Benedictus will no longer be able
 to use him as the frontman of his campaign.
 From the Book of Destiny it is already known
 to me that *Strader's* life will soon come to its
 end. This Benedictus cannot see.

My loyal servant, you are almost super-clever.
 You think that I am nothing but a childish invention.
 Your reasoning is so astute
 that people are impelled to listen to you.
 Go straight to *Strader*. Prove to him
 that his machine contains a flaw.
 Convince him that the reason it will not work is not the
 unfavourability of the times,
 but the fact that it's been ill-conceived.

in order to convince Dr Strader of the truth.
[47, p. 107f]

As it turns out, Ferdinand Reinecke succeeds in convincing Strader and others that the machine is faulty, as shown in the thirteenth scene between Hilary and Romanus:

Hilary:

It's painful to have to admit to you
that the knot of destiny which has been formed within our circle
is almost crushing me.
What is there to build upon
when all around us everything is threatening to collapse?
Through you, the friends of Benedictus
have been excluded from what we're trying to do.
And now Strader is being tormented by the agonies of doubt.
A certain man, who has often opposed our efforts in the past
with great cleverness ... and hatred too ...
has been able to prove to him
that his invention has been fundamentally misconceived —
that the problem lies with the machine itself,
and not in any external constraint.
My life has been in vain. I wanted deeds;
but I always lacked the ideas to bring them into being.
This barrenness of soul has tormented me most bitterly.
The only thing that has always sustained me
has been my spiritual vision.
Yet even this ... in Strader's case ... deceived me.
[47, p. 111]

And finally, shortly before his death, Strader's own words in his letter to Benedictus confirm this:

◁My friend, when I learnt that the obstruction to my work
arose not only from external sources
but through defects within its basic conception,
I was almost completely crushed.
And then there came to me again
that image which I recently described to you.
But this time it ended differently.
It was not Ahriman who rose up against me as my opponent;
it was a spirit-messenger, whose form vividly appeared to me
as the embodiment of my own faulty thinking.
I remembered then the words you spoke to me
about the strengthening of my inner being;

and immediately . . . the figure vanished.>
[47, p. 124]

We may wonder whether Strader's machine was doomed to failure at the outset, or whether the working of Ahriman at this point is to be regarded as a deceptive suggestion. The following comment quoted from ALICE FELS explains:

At that time Rudolf Steiner spoke in rehearsal of Ahriman's significance; we could perhaps think the fault in Strader's invention is just Ahriman's subterfuge. But that is not the case. Ahriman is a greater, more significant spirit remote from any petty intrigue. There really is a fault in Strader's plan and Ahriman has spotted it through his superior intelligence. The destructiveness in Ahriman's scheming is in wanting to undermine confidence. [8, p. 25]

That is all for the moment from the Mystery Dramas regarding the Strader machine, which Rudolf Steiner referred to in the lecture quoted above of 1 December 1916 [23] in connection with the capacity to influence machines that is to be developed in the future. A certain parallel between Strader and Keely cannot be dismissed out of hand. Indeed, neither of them succeeded in applying their machines. Yet Steiner said in the lecture of 8 November 1920 already quoted above [41] that Keely's motor did not function, because it was still too strongly developed out of mere instinct. This is even more clearly expressed in Ehrenfried Pfeiffer's comments on conversations he had with Rudolf Steiner, which have been handed down in the so-called <Schiller File>. There it says:

The Keely Motor was mentioned. Mr. Keely could not realise his assertions because his invention would have been exploited for egoistical purposes (war). Only certain people could set the Keely Motor in motion, and also many of them only when Mr. Keely touched them on the shoulder. With these experiments, the moral side of humankind definitely comes into question. Only persons with an altruistic morality could and should serve such etheric oscillatory machines, otherwise great destructive mischief occurs. [10, p. 11]

This is largely confirmed in HELENA PETROWA BLAVATSKY's comments in 1888 about the Keely motor. She wrote in the chapter *The Coming Force* of her book *The Secret Doctrine*:

No one, who should have repeated the thing done by himself, could have produced the same results. It was <Keely's ether> that acted truly, while <Smith's or Brown's> ether would have remained for ever barren of results. For Keely's difficulty has hitherto been to produce a machine which would develop and regulate the <force> without the intervention of any <will power> or personal influence, whether conscious or unconscious of the operator. In this he has failed, so far as others were concerned, for no one but himself could operate on his <machines.> Occultly this was a far more advanced achievement than the <success> which he anticipates from his <wire>,³ but the results obtained

³After Keely's initial experiments were unsuccessful, he turned his attention to a kind of experiment with a wire. Thus two different approaches by Keely may be referred to. We shall return to this below.

from the fifth and sixth planes of the etheric (or Astral) Force, will never be permitted to serve for purposes of commerce and traffic. [1, p. 562]

And further on she wrote:

The discovery in its completeness is by several thousand — or shall we say hundred thousand? — years too premature. It will be at its appointed place and time only when the great roaring flood of starvation, misery, and underpaid labour ebbs back again — as it will when happily at last the just demands of the many are attended to; when the proletariat exists but in name, and the pitiful cry for bread, that rings throughout the world unheeded, has died away. [1, p. 563]

These last quoted words of Blavatzky correspond very clearly to Rudolf Steiner's conclusions, passed on to us by Ehrenfried Pfeiffer, regarding the results of initial research which Ehrenfried Pfeiffer and Guenther Wachsmuth carried out in Dornach under Rudolf Steiner's instructions. But before we turn to these, we shall complete the review of comments related to this kind of technology in Rudolf Steiner's lectures. Other compilations on Keely and the Strader machine have already been made [53, 54, 12, 20, 14, 15, 16, 17, 18, 19, 9]; among them an article in 1997 by Paul Emberson [6].

We continue with Rudolf Steiner's comments. In November 1916 the following shorthand note was taken:

What has come about primarily during the course of the fourth post-Atlantean epoch is that the human being has been liberated from the external, inorganic world which he embodied in his tools. Eventually, he will be reunited with what he has embodied in them.

Today, machines are constructed. Of course, they are at present objective, containing little of the human element. But it will not always be so. The course of the world tends to bring about a connection between what the human being is and what he produces and brings into existence. This connection will become ever more intimate. It will appear first in those areas that furnish the foundation for closer relations between one person and another — for example, in the treatment of chemical substances that are used in medicines. People still believe that when sulphur, oxygen, and some other substance — hydrogen or something else — have been combined, the product of this combination possesses only those effects that are derived from the individual substances. Today this is still true to a large extent, but the course of world evolution is tending toward something different. The subtle pulsations lying in the human being's life of will and disposition will weave and incorporate themselves gradually into what he produces. Thus, it will not be a matter of indifference from whom a certain preparation is received.

Even the most external and cold technical development tends toward a quite definite goal. Anyone who can form a vague conception of the future of technical development knows that an entire factory will operate in a completely individual way that will be in keeping with the one who directs it. His or her

attitude of mind will enter into the factory and will pass over into the way in which the machines work. Human beings will blend with this objectivity. Everything that they touch will gradually come to bear a human impression. No matter how stupid it may seem today to the clever people — in spite of St. Paul having said that what men consider to be clever is often foolishness in the eyes of God — people will realize that the time will come when an individual will be able to step up to a mechanism standing at rest and will know that to set it in motion he must move his hand this way, that way, and another way. Through the vibrations of the air caused by this signal, the motor, adjusted beforehand to respond to it, will be set in motion.

Then, national economic development will become such that to patent machines will be quite impossible; such things will be replaced by what I have just explained. Thus, everything will be excluded that has no relation to human nature, and by this it will be possible to bring about something quite definite. Just imagine what a truly good person who has reached an especially high level of morality will in future be able to do. He will construct machines with signals that can be governed only by individuals like himself. Evil-minded people will produce quite different vibrations when they make these signals, and the machine will not respond. [38, Dornach, 12 November 1916, p. 82f]

A month later, in December 1916, he said the following:

Mankind is now faced with having to solve certain quite specific problems. This applies, above all, to something I have already spoken about, which is connected with today's much-admired technology — a consequence of natural science — which is also much admired by spiritual science. In the comparatively near future, this much-admired modern technology will reach a final stage where it will, in a certain way, cancel itself out. In contrast, something will come into being — I have mentioned it in passing here — which will enable people to make use of the delicate vibrations in their etheric bodies as a driving force with which to run machines. Machines will exist which are dependent on people and people will transfer their own vibrations to the machines. People alone will be capable of setting these machines in motion by means of certain vibrations stimulated by themselves. People who today see themselves as practitioners of science will, in the not too distant future, find themselves faced with a complete transformation of what they today call the practical application of science; for the human being is to be tuned in with his will to the objective sphere of feeling in the universe. [42, Dornach, 18 December 1916, p. 163]

In connection with these comments, Rudolf Steiner once again spoke of the phenomena of eugenic and hygienic occultism, although he did not use those specific terms. Interestingly, in this lecture he indicates the time as <in the not too distant future>, which, however, leaves room for interpretation.

A year later, on 25 November 1917, Rudolf Steiner spoke again about three vital issues or problems that mankind would face before the end of the fifth post-Atlantean epoch. Even though, as in December 1916, he did not use the terms mechanical, eugenic or hygienic occultism, it appears to refer precisely to what was also being discussed in December 1918. Here I quote the part that deals with mechanical occultism:

I wish to point out once again that what is essential for humanity in this fifth post-Atlantean period is to enter into a special treatment of great issues of life that have been obscured in a certain way through the wisdom of the past. I have already pointed this out to you. One great issue of life can be characterized in the following way: an attempt will have to be made to place the spiritual etheric in the service of outer practical life. I have brought to your attention that the fifth post-Atlantean period will have to solve the problem of how human moods, the motions of human moods, allow themselves to be translated into wave motions on machines, how man must be brought into connection with what must become more and more mechanical. For that reason I called your attention a week ago to how superficially this mechanizing will be accepted by a certain portion of the surface of the earth. I presented an example to show how, following the American way of thinking, an attempt was made to extend the mechanical over human life itself. I presented the example of the pauses [*sic.* breaks, *Tr*:⁴] that were to be exploited so that, instead of far fewer tons, up to fifty tons could be loaded by a number of workmen. For this one need only carry the Darwinian principle of selection⁵ more actually into life.

In such situations the will is there to harness human energy to mechanical energy. These things should not be treated by fighting against them. That is a completely false view. These things will not fail to appear; they will come. What we are concerned with is whether, in the course of world history, they are entrusted to people who are familiar in a selfless way with the great aims of earthly evolution and who structure these things for the health of human beings or whether they are enacted by groups of human beings who exploit these things in an egotistical or in a group-egotistical sense. That is what matters. It is not a question of the what in this case; the what is sure to come. It is a question of the how, how one tackles these situations. The what lies simply in the meaning of earthly evolution. The welding together of the human nature with the mechanical nature will be a problem of great significance for the remainder of earthly evolution.

I have deliberately drawn attention often, even in public lectures, to the fact that the consciousness of the human being is connected with the forces of disintegration. On two occasions I have said in public lectures in Basel that

⁴The abbreviation *Tr*: (for translator) refers throughout the whole text to David Heaf.

⁵On 19 November Rudolf Steiner gave the example of how Taylor arranged breaks for the workers in such a way that their productivity was many times increased. The lengths of the breaks was based on the arithmetical mean of the physiologically necessary relaxation period for all workers. Thus there were workers for whom this period was too short. These were dismissed. It exactly corresponded to Darwin's principle of selection.

within our nervous system we are dying. These forces, these forces of dying away, will become more and more powerful. The bond will be established between these forces dying within man, which are related to the electric, magnetic forces, and the outer mechanical forces. Man will to a certain extent become his intentions, he will be able to direct his thoughts into the mechanical forces. Hitherto undiscovered forces within human nature will be discovered, forces that will work on outer electric and magnetic forces. The first problem is to bring together human beings with the mechanical, which will have to prevail increasingly in the future. [36, Dornach, 25 November 1917, p. 187f]

And later in the same lecture he says:

From the co-operation of what comes from Pisces and Virgo one will not be able to bring about anything harmful. Through this one will achieve what in a certain sense loosens the mechanism of life from the human being but will in no way found any form of rulership and power of one group over another. The cosmic forces that are called forth from this direction will beget strange machines but only ones that will relieve the human being from work, because they will have within them a certain force of intelligence. A cosmically oriented spiritual science will have to concern itself so that all the great temptations that will emanate from these mechanized beasts, which man creates himself, will not exert a harmful influence upon the human being. [36, Dornach, 25 November 1917, p. 199f]

Here Rudolf Steiner spoke only about translating the motions of human moods into wave motions on machines. This does not contradict what is contained in the passages quoted already about the coming new kind of technology. But this is the only place in Rudolf Steiner's lectures where he refers to as yet undiscovered forces in the human being which would affect external electric and magnetic forces. Did Rudolf Steiner mean the same kind of capacity or forces as those he spoke of elsewhere? Paul Emberson writes in his article in *Der Europäer* of 1997 that he does not think so, but sees in these indications, that are about forces in the human being affecting electrical and magnetic forces, a warning by Rudolf Steiner regarding digital electronics. [6, p. 7f] We shall return to this after we have presented the remaining relevant comments by Rudolf Steiner.

In a kind of aside in a lecture on 12 October 1918 where he was speaking of rhythms in nature, Rudolf Steiner said:

The discerning of nature's rhythms — that will be true natural science.

By learning to understand the rhythms in nature we shall even come to a certain application of the rhythmical in technology. This would be the goal for future technics: harmoniously related vibrations would be set going; they would be small at first but would act upon each other so that they became larger and larger, and by this means, simply through their resonance, a tremendous amount of work could be done. [28, Dornach, 12 October 1918, p. 100]

Only three days before, on 9 October 1918, Rudolf Steiner gave a lecture that became particularly well known in anthroposophical circles: *The Work of the Angels in Man's Astral Body*. In it he characterised what can be only very briefly summarised here, namely that the angel, as a higher spiritual being, produces in the human astral body pictures which give the impulse for future earth evolution. After this he continues:

After all this, you will understand me when I point out that this epoch of the Spiritual Soul [also commonly translated <consciousness soul>, *Tr:*] is heading towards a definite event, and that — just because it is the Spiritual Soul that is involved — it will depend upon men themselves how this event takes effect in the evolution of humanity. It may come a century earlier or a century later, but it is bound to form part of the evolutionary process. It can be characterised by saying: Purely through the Spiritual Soul, purely through their conscious thinking, men must reach the point of actually perceiving what the Angels are doing to prepare the future of humanity. The teachings of Spiritual Science in this domain must become practical wisdom in the life of humanity — practical, because men can be convinced that it belongs to their own wisdom to recognise the aims of the Angels, as I have described them.

But the progress of the human race towards freedom has already gone so far that it depends upon man himself whether he will sleep through this event or face it with fully wide-awake consciousness. [26, Zürich, 9 October 1918, p. 18f]

After Rudolf Steiner further described in this lecture what changes this event would bring, he let it be known what the consequences would be if people did not experience it consciously: then the angel would have to realise its intentions through the sleeping human body. He summarised this again in the following passage:

Here lies the great danger for the age of the Spiritual Soul. This is what might still happen if, before the beginning of the third millennium, men were to refuse to turn to the spiritual life. The third millennium begins with the year 2000, so it is only a short time ahead of us. It might still happen that the aim of the Angels in their work would have to be achieved by means of the sleeping bodies of men — instead of through men wide awake. The Angels might still be compelled to withdraw their whole work from the astral body and to submerge it in the etheric body in order to bring it to fulfilment. But then, in his real being, man would have no part in it. It would have to be performed in the etheric body while man himself was not there, just because if he were there in the waking state, he would obstruct it.

I have now given you a general picture of these things. But what would be the outcome if the Angels were obliged to perform this work without man himself participating, to carry it out in his etheric and physical bodies during sleep?

The outcome in the evolution of humanity would unquestionably be three-fold. [26, Zurich, 9 October 1918, p. 25f]

Then come Rudolf Steiner's comments that once again touch on the field of mechanical, eugenic or hygienic occultism. He did not refer to these concepts per se, though he did go on to describe how it would lead to the wrong developments in the respective fields. Put very simply, eugenic occultism would then correspond to an aberration in the sex drive and hygienic occultism to a distorted exploitation of medical knowledge. He also gave such indications on the aspect of mechanical occultism in which he nonetheless mentioned a new kind of technology:

The third result will be this. — Man will get to know of definite forces which, simply by means of quite easy manipulations — by bringing into accord certain vibrations — will enable him to unleash tremendous mechanical forces in the world. Instinctively he will come to realise in this way the possibility of exercising a certain spiritual guidance and control of the mechanistic principle — and the whole of technical science will sail into desolate waters. But human egoism will find these desolate waters of tremendous use and benefit. [26, Zurich, 9 October 1918, p. 28]

These words of Rudolf Steiner suggest that future technology, based on the harmonising of vibrations, would not have an inherently positive effect. And in a lecture in October 1923, with which we here end this compilation of lecture citations, he did not speak unequivocally positively about the coming of such technology. Rudolf Steiner's following reference to the organism of the cow may seem obscure, when here it is possible to present it only out of its original context; but, in going into it, we can simply repeat the advice given to readers at the beginning of this review, namely that they study the original sources themselves in order to come to their own conclusions about them.

As long as men confine these processes of measuring, counting and weighing to their intellect alone, not much harm is done. They are certainly very clever, but by no means so clever as the universe. Therefore, not much harm is done as long as people study the universe and carry on their measuring, weighing and counting merely in a dilettante way. Were our modern civilisation, however, to be transformed into initiation, the continuance of this tendency would become a very serious matter. This might occur if the civilisation of the West which rests upon weighing, measuring and counting were to be flooded by what is always possible in the East; if through the science of initiation that were to be established which really exists spiritually in the nature of the cow. For if you can penetrate into this nature, if you can learn how it is organised, how it is burdened with the gravity of the earth by all the food it consumes⁶ (that is, with all that can be weighed, measured and counted), if you can learn to understand the whole spiritual organism of the cow as she lies in the meadow digesting her food and revealing in this digestive process such wonderful things concerning the universe, you will also know how to combine what can be weighed, measured, and counted into a system which

⁶Earlier in this lecture Steiner mentioned the fact that the cow consumes daily an eighth of its body weight in food.

would conquer all other forms of civilisation. You could then impose a civilisation upon the whole earth which would henceforth only weigh, measure and count, suppressing all else.

What would initiation into the organisation of the cow reveal? This is a very grave question; the result would be of tremendous significance.

The way in which machines are constructed varies greatly according to the machine, but the tendency is that all those that are still primitive, all imperfect machinery should gradually come to be moved by vibrations, that something should oscillate in it, and through this — through vibrations, through oscillation, through periodic movements it should attain the desired result. This is the intention in all machinery. But when man is able to construct the several parts of machines in accordance with what can be learnt from the distribution of food in the organism of the cow; the vibrations produced on the earth by machines — these small earthly vibrations — will correspond with what is above the earth in our planetary system; they will resound and vibrate in harmony with our earthly system just as a piano wire vibrates when a corresponding note is struck.

This is the awful law of the sympathy of vibrations; this law would be fulfilled if the cry of the cow were to decoy the peoples of the East and lead them astray so that it permeated convincingly the unspiritual, purely mechanical, civilisation of Central Europe and of the West. A mechanised system would result which would correspond exactly to the mechanising of the universe. In that case the influence of the atmosphere, the influences of the stars and other heavenly bodies, would be wiped out of human civilisation. That which is experienced, for instance, in the seasons of the year, which is experienced in living through the budding and sprouting life of Spring, and the declining, dying life of autumn all these things would lose their meaning for man. Human civilisation would be permeated with the rattle of vibrating machines, and the echo of these rattling vibrations would stream to earth from the cosmos as a response to this mechanising of the earth.

If you notice what is at work at the present time you will realise that a part of our modern civilisation is absolutely on the way to adopting this frightful degeneration as its goal. [24, Dornach, 20 October 1923, p. 40f]

According to these comments, evolution would be towards machines based on vibrations, i. e. something towards which the future is anyway heading. It could turn out that the way in which these machines are constructed could have negative consequences. Thus it is possible to see in these comments a similar indication to that in the lecture of 9 October 1918, in that there too he mentions how a technology based on harmonising certain vibrations could have negative consequences.

We shall summarise these quotes once again in order to try to obtain at least a quantitative overview. In doing so we need to be absolutely clear that such a «quantification» can of course be experienced as a distortion of Rudolf Steiner's work. The author of this article is fully aware of this, and even holds the view that it wholly contradicts Rudolf

Steiner's intentions to take apart his comments in this way in the hope of gaining knowledge from them. Therefore doing it can in no way be described as anthroposophical work. It is just research work that anyone, even a person not working anthroposophically, could have carried out. Having said this, we regard it as nevertheless justifiable to continue with the course we have embarked on.

In all quotes, with the exception of the first in January 1906, Steiner is speaking of some form of future machines which can be set in motion by oscillations, waves or vibrations. That these quotes concern oscillations which would have to do with the body, soul or spirit of human beings is a pervading theme in them as well, apart from in the quotes of 12 October 1918 and 20 October 1923, where it was not expressly stated what oscillations are involved.

The February 1906 and November 1920 quotations explicitly concerned vibrations of the human organism or oscillations produced in it, just as in June 1916 Rudolf Steiner referred to waves that people produced in their sounds, in their speech, or generally as human beings. In November 1916, Rudolf Steiner spoke of air vibrations resulting from hand movements, saying that pulsations residing in a person's life of will and disposition would in the future be incorporated in what the person produces.

Similarly, in November 1917, he said that the human voice motions would be translated into wave motions of machines. In direct connection with this comment, Rudolf Steiner spoke of forces in the human being that have yet to be discovered, forces of dying away, coming from the nervous system, which would affect outer electric and magnetic forces. These will enable human beings to translate their intentions and thoughts into mechanical forces. It is not clear in this description whether this involves a further characterisation of the previously mentioned translation of moods to machines, or whether, as Paul Emberson understood it in 1997, a quite different force is involved. Each reader is recommended to thoroughly examine the sources themselves.

On 9 October 1918, while discussing aberrant evolution, it was of course not stated that it would involve forces produced in the body, soul or spirit of the human being, but it was nevertheless made clear that a certain spiritual guidance of the mechanistic principle would be instinctively realised. In December 1919, Rudolf Steiner mentions merely latent capacities in people which, once these capacities have developed, would be able to set machines in motion by means of the law of harmonious oscillations.

What Rudolf Steiner means here by the law of harmonious oscillations is not immediately clear. On 9 October 1918 he said that, through quite easy manipulations, tremendous mechanical forces would be unleashed. And on 12 October 1918 he refers to harmonious vibrations which are produced on the small scale and then translated to the large scale. In November 1920, he explicitly referred to the smallest nerve vibrations in people being transferred to machines and, in doing so, becoming intensified.

Just as in her discussion of Keely, Helena Petrowa Blavatsky wrote that his ether was effective in driving his motor, so also there is a point in Rudolf Steiner's lecture of December 1916 where he mentioned subtle vibrations and oscillations which reside in the etheric body.

In the earliest quote from January 1906, Rudolf Steiner did not speak of oscillations or anything similar. But he did call the force with which machines will be driven in the future a spiritual moral force or one that is produced by the soul. There he also spoke

of the power of selfless love, but in his further comments he never returned to it. Again he mentioned only this in the two lectures of January and February 1906, saying that this force concerned a moral element such that the machines would not work when immoral or egotistic people used them. It is true that in November and December 1916 he said more about this, namely that it would become possible to construct machines that could only be set in motion by people with a good moral disposition or by people with a certain intrinsic vibration. But in June 1916 he had already emphasised that it was lucky that Keely had not reached his goal, as otherwise the World War would have been much worse.

With this in mind, we may remember from the quote from Blavatsky cited above that Keely's invention arrived several millennia prematurely and that it would only find its appointed place when social conditions among people have dramatically improved. According to Ehrenfried Pfeiffer, Rudolf Steiner's conclusions from the experiments on alternative technology carried out at the Goetheanum at that time wholly accord with this. Here, a long passage is quoted from Pfeiffer's autobiographical memoirs:

The method of science, in a materialistic sense, is based on analysis, splitting apart (today atom-splitting and fusion, etc), disintegration, separation, dissecting, and all the procedures which have to destroy and take apart, to work on the corpse rather than to grow, to develop, to synthesize. That the human mind was captured by these methods of breaking apart: in that I saw the source of our present situation. My question, therefore, was: Is it possible to find another force or energy in nature which does not have in itself the ductus of atomizing and analysis, but builds up, synthesizes? Would we discover those constructive forces which make things alive and grow, develop adequate building-up methods of investigation, and eventually be able to use this force for another type of technology applied to drive machines. Then, because of the inner nature of this force or energy, we might be able to create another technology, another social structure as well as constructive instead of destructive thinking. This force must bear within itself the impulse of life, of an organic principle, just as the so-called physical energies have the splitting, separating trend within themselves. My question to Rudolf Steiner during October 1920 and spring 1921 therefore, was: <Does such a force or source of energy exist? Can it be demonstrated? Could an altruistic technology be built upon it?> When these questions formed themselves in my mind, I met in Günther Wachsmuth a life-long friend who pondered about exactly the same problems. Some discussions with Rudolf Steiner were carried out individually; others we both together had with Rudolf Steiner.

My questions were answered as follows: <Yes, such a force exists, but is not yet discovered. It is what is generally known as the ether, not the physical ether, but the force which makes things grow, lives, for instance, in the seed as *Sammenkraft*. [seed power, *HG*, germinative force, *Tr.*] Before you can work with this force, you must demonstrate its presence. As we have reagents in chemistry, so you must find a reagent upon the etheric force. It is also called formative etheric force, because it is the force which creates the form, shape, pattern of a living thing, growth. You might try crystallization processes to

which organic substances are added.⁷ It is possible, then, to develop machines which react upon and are driven by this force.> Rudolf Steiner then outlined the principles of the application of this force as source of a new energy. [...] To me the task fell to start experiments. In this, the cooperation between us, the seed for the *Forschungsinstitut am Goetheanum* [Research Institute at the Goetheanum] was laid. I had to perform certain experiments which I do not feel at liberty to describe. The result of these experiments were reported to Rudolf Steiner, whereupon he said with utmost earnestness: <The outcome of the experiment points to another force, not the etheric one, but an astral one (i. e. forces which live in sentient matter, nerve, brain).> That the experiment did turn out this way was the answer of the spiritual world to him, and it meant that the time was not yet ripe to make use of the etheric force. I asked when would the time be ready. He answered: <When the social conditions are such that no misuse of this force can be done for selfish purposes>. That would only be the case if threefolding of the social organism would be practised over at least a few territories on earth. Until this time, experiments in the direction of using the etheric forces would not be successful, or should not be done. [13, p.109f, slightly edited by Tr.]

Ehrenfried Pfeiffer reported in the same sense as this in his lecture of 1 October 1958 in Dornach. [13, p. 191f] There too he said that he was under an obligation to Rudolf Steiner to maintain complete silence about the field of these initial experiments. However, in the *Schiller File* mentioned above can be found the following comments that possibly further our enquiry. We would like to reproduce them here. In doing this it should be said that the publication of the Schiller File is certainly not unproblematic. For one thing, because it is possible that the reports of Rudolf Steiner's comments contained within it may be full of errors and, for another thing, because some of the reports in it were not intended by the authors for publication. As publication has nevertheless taken place, we regard it as permissible to quote it:

Dr. Ehrenfried E. Pfeiffer reported that he had a series of conversations with Rudolf Steiner about experimental work in which he had taken part.

Rudolf Steiner was asked whether etheric formative forces [*Bildekräfte*] could be made available in the laboratory and also for technical purposes. This question arose from his lectures in which the Keely Motor and the future use of oscillations had been referred (e. g. Dornach, 25.11.1917). Rudolf Steiner had answered: <In the first place it is necessary to find a reagent for the etheric formative forces. One must be sure that the formative forces are active in any research arrangements. This could happen with phenomenon of warmth and light, and even with cultures of bacteria too, that is, living substances. (Dr. Pfeiffer suggested that *Paramecium* could also be used as a test medium.) Furthermore, for example, life-ether could be obtained so that animals [bacteria, etc., Tr.] brought into the evacuated vessel would be killed. The life-ether

⁷This has been done, and the results described elsewhere, known today as the method of sensitive crystallization.

would then be extracted with ethyl alcohol.›

Rudolf Steiner referred to the book by Râma Prasâd: *Nature's Finer Forces*. There are seven kinds of ether mentioned. Today, so said Rudolf Steiner, information about the first four kinds of ether only may be given because the premature knowledge and misuse of the three others could lead to the greatest catastrophes.

Rudolf Steiner recommended the study of resonance and wave motion (oscillation); likewise the influence of human rhythms on acoustic and magnetic phenomena. The transformation of delicate pulsations into larger waves. This means, above all, that substances must be found which react very sensitively. Here copper came into consideration.

Human vibrations could also be measured; for example by using a fine copper strip in an evacuated tube (Geissler tube) and the influence of the light phenomena observed (or measured with an electroscope). A telephone receiver could also be used. There lies another possibility here, to set up a connection between the human tongue and a flame (via a wire or thread) and observe the changes. In connection with the above, Dr. Pfeiffer had set up an experiment and observed that the approach (not touching) of a discharge tube to various parts of the human body produced colour changes and shifts in the dark regions. When an evacuated glass globe was brought near the human body he noticed light phenomena too. These light phenomena are quite different for different parts of the body. Dr. Pfeiffer told Rudolf Steiner about all this; Rudolf Steiner said that the observed changes in the discharge tube could be traced in the first place to the influence of the astral body, that is to say not to etheric occurrences. However, he ruled out the course of the experiments up to that moment because the time was not yet ripe for the etheric forces to become operative. Dr. Pfeiffer asked: When would the time come? Dr. Steiner replied: when the threefold social order and Waldorf School education were realised and humanity had another moral constitution. Until then, these studies should be carried out in the greatest privacy and secrecy.

Finally Dr. Steiner mentioned that electromagnetic experiments would succeed better in America because greater concentrations of magnetic forces exist there. Such experiments should be conducted there.

In a further indication Rudolf Steiner suggested research into the reaction of the human being with a motionless burning flame⁸. One could also observe that, when someone speaks, the etheric body of the listener follows the vibrations of the speech of the speaker. If one makes a eurythmical movement, the etheric body of the other mimes this movement in resonance. (In this connection see the lecture of 20.2.1917.) One must now investigate how far, for example, an ›I‹-movement can be transmitted to a machine by means of resonance so that a lever arm, for example, of this machine follows the ›I‹-movement. [10, p. 10f, slightly edited by Tr.]

⁸This refers to the Schiller File page 10.

Considering Rudolf Steiner's advice that researching a new technology of this kind would not lead to success before social conditions have changed, and that until then absolute silence should be maintained, we may wonder how this was to be reconciled with the founding of Anthro-Tech in 1989/90, especially given that its aim was precisely this research. One aspect of this may be another record of a further comment by Rudolf Steiner. This was reported by Hans Kühn in a written record in an article in 1971 in *Mitteilungen aus der Anthroposophischen Arbeit in Deutschland*. In addition, the editors of *Der Europäer* of March 2003 made available a typewritten page which is undersigned <Hans Kühn, August 1971>, and contains more detail. At the end of his 1971 article Hans Kühn wrote:

Summarising our train of thought, we may describe the Strader machine as the power source of the future, of which Rudolf Steiner said that it should be invented ... in the next twenty years, because otherwise the Ahrimanic counterpart of it would be developed, that would serve only destructive ends. [11, p. 293]

According to the typewritten record, Rudolf Steiner said the following sentence, which, for some unknown reason, does not appear in his collected works. In relation to Hans Kühn's 1971 article, it says word for word:

I can vouch for the quote at the end of the article because I heard it myself. Where the three dots occur it said: what would matter is that in our circles the Strader machine would be invented, otherwise its Ahrimanic counterpart will be developed that serves only destructive ends. [15]

This statement is central to the concerns of Anthro-Tech, because it is often referred to in its publications. As we shall soon see, it is not absolutely clear when Rudolf Steiner is supposed to have made the statement; whether before or after the First World War. One may also wonder why Rudolf Steiner on the one hand hoped the Strader machine would be developed within twenty years and yet on the other hand advised Ehrenfried Pfeiffer not to do any further research on etheric technology. To explain this, Paul Emberson and his colleagues offered the following in the Anthro-Tech News issue No. 7 in 2004:

A no less important question is why Rudolf Steiner strongly urged his circle of friends to realise within twenty years the technology shown in the Strader models, despite its dangers. Here too we would only be able to answer this question properly by referring to matters beyond the scope of this article. Suffice it to say that, when Rudolf Steiner spoke on Strader's inventions, the world was a very different place in 1912 from what it became by the end of the Great War. We may therefore assume that in 1912/13 it would have been possible for a group led by Rudolf Steiner himself to develop that technology in a moral, protected form. After the war, conditions in all spheres of life were so utterly changed that even a soul as innocent as Ehrenfried Pfeiffer could not bring the right forces into play. This is one of the reasons why Anthro-Tech ceased to work on the technology of the Strader models years ago, even though we know in broad outlines how the technology works. (We

have not worked out all the details.) For some years now, we have concentrated on moral technology,⁹ which corresponds to Keely's first kind. It does not belong to material occultism. From the outset we have attributed it to the general field of mechanical occultism. [2, p. 11f]

To understand this quote in context, we need to emphasise again what we have already mentioned above; namely that Keely, after his first experiments bore no fruit, turned to those of a different kind. That other kind is what Helena Petrova Blavatsky referred to, in the extract quoted above, as 'his wire'. Paul Emberson et al. state that they have discovered that only that second kind of experiment is the one that can be used for immoral purposes. They wrote:

Helena Petrova Blavatsky was the first person to understand Keely's two kinds of technology and to publish an evaluation of them. She expressed the view that the first kind was good — it alone would be desirable for the future. The second was only of passing usefulness, was of less value and not protected against misuse. What then was this dangerous second kind of technology that Keely developed, albeit incompletely? It was nothing other than what Rudolf Steiner called material occultism. We need to be quite clear about this Material occultism will remain dangerous as long as mankind is not free of immorality. [2, p. 10]

From our study of Blavatsky's statements it is our understanding that she expressed herself likewise regarding Keely's first kind of technology too, because she wrote that it would have arrived thousands of years too soon. Here arises an additional need for clarification. We would like more information as to how Paul Emberson manages to differentiate between material and mechanical occultism. In a lecture on 1 December 1918 by Rudolf Steiner, it seems to us that the two terms are used synonymously. It remains unclear how Keely's first kind is supposed to be only morally applicable.

In any case, from the quote from Anthro-Tech News No.7 it appears that Paul Emberson regards the statement of Rudolf Steiner as having been made in 1912/13. Anthro-Tech News issue No. 12 (English edition) in 2009 confirms this:

Rudolf Steiner said in 1913 that the development of this technology was urgent. He hoped it would be achieved in anthroposophical circles by the year 1933. [5, p. 1]

However, in apparent contradiction to this and to the passage cited from No. 7, later in No. 12 (English edition) it says:

Rudolf Steiner spoke about artificial intelligence in 1917, before the age of radio broadcasting, television and electronic devices. Although the world was in the throes of the Great War, he seems still to have hoped that moral technology could be developed in anthroposophical circles soon enough to prevent the advent of what he called its Ahrimanic counterpart. [5, p. 7]

⁹It is named thus because in this form it can only be moral. It is protected in its very nature from misuse.

So is Steiner supposed to have still had this hope in the year 1917? Christoph Podak, who compiled the article for *Der Europäer* in which the typewritten page attributed to Hans Kühn is mentioned, fitted in the sentence in Rudolf Steiner's lecture of 1 December 1918. Why Christoph Podak did this is not clear from the article itself. However, when we asked him why, he told us that, in additional documentation that was at his disposal during his researches, Hans Kühn had cited the lecture of 1 December 1918, and in so doing had inserted the sentence in question in the appropriate place. These documents are now with the executors of Rudolf Steiner's estate where they can be examined. According to Christoph Podak, the executors are convinced that the sentence should have been at this point and in this lecture, and this will be taken into consideration in a new edition.

Starting from 1918 (or 1913) and adding 20 years for the period in which, according to Hans Kühn, Rudolf Steiner hoped to see the invention of the Strader machine, we arrive at the year 1938 (or 1933). Obviously this has still not happened until this day. In the typewritten page signed by Hans Kühn, it is supposed that the Ahrimanic counterpart must be to do with the atom bomb. But Paul Emberson is convinced that computer technology is what is meant by this term.

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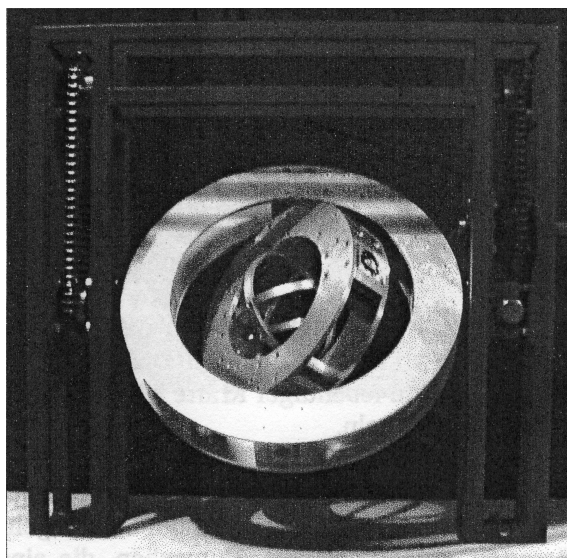


Figure 1: Harmogyra (from Anthro-Tech News Special Edition 2000/2001)

In Anthro-Tech News issue No. 7 of 2004, two main areas of Anthro-Tech research are presented: one involves research into the work of John Worrell Keely and the other the further development of a mechanism called the *Harmogyra*, which produces simultaneous rotation in three planes of space (see Fig. 1). According to the authors, this mechanism is a development of an indication by Rudolf Steiner, the source of which is unfortunately not given. In relation to Keely's research, it means that, as well as an appropriate tech-

nical mechanism, they had to develop capacities understood to be part of mechanical occultism. The discussion of this went into further details which here we can only roughly summarise. We justify this on the grounds that since then, on Anthro-Tech's own admission, research in the Keely direction has not been taken further. Instead, in Anthro-Tech News issue No. 11 (English edition) of 2006, it is reported that some people experienced totally unexpected effects when watching the motion of the Harmogyra, which in the meantime had been further developed.

After the meeting, two persons came independently to Paul Emberson and told him that when the Harmogyra began to spin they had experienced something totally unexpected. Both of them had felt a pronounced sensation in the chest, with a particular feeling in connection with their breathing. Why? No one knew.

Perhaps the incident would have been forgotten if it had not repeated itself. But it did occur again at intervals. Visitors to the Institute, who knew absolutely nothing of the matter, have described exactly the same experience. Others, more numerous, have experienced a powerful emotion rather than a 'physical' sensation. Some visitors — men and woman burst into tears when they see the motion of a Harmogyra. [3, p. 7]

This appears to have taken the place of researches into Keely's technology. In issue No. 9 of 2008 only the Harmogyra is specified as the research area on moral technology. On the first page of the No. 12 (English edition) issue of Autumn 2009, the progress of research is described in the following way:

Participants at our conferences in Switzerland since the beginning of 2009 have been able to see the new variable Harmogyra in operation. The frequency of oscillation (rotation) about each of the three spatial axes is individually tunable, so that 'chords of oscillation' equivalent to 3-note musical chords in any mode or system of intervals can be produced, within a certain range. These chords of oscillation call forth sympathetic etheric vibrations in the rhythmic system of the observer, which are most commonly experienced as a clearly perceived sensation (sometimes a feeling of liberation) in the region of the heart and lungs.

At present this interplay of human and mechanical oscillations can be demonstrated in one direction only, though in fact it works both ways. When we reach the point where the reverse direction can be controlled and demonstrated, one of the most important operating principles of Moral Technology will have been mastered. [5, p. 1]

This is describing an interaction between people and a mechanism based on sensations that some people experience, some more some less, when looking at the Harmogyra. As the Harmogyra produces rotations that are associated with balanced oscillations, it is therefore assumed by Anthro-Tech that the research is on the right path towards what Rudolf Steiner had meant by a technology based on harmonious oscillations. Now it would be a matter of constructing mechanisms that are so subtle and sensitive that the

feelings emanating from people could be translated into a movement of the mechanism. To many people this may sound like pure fantasy. Indeed, there are certainly many technical and even art works that evoke sensations in people. Quite obviously the Harmogyra is one of them. But does this really entail a principle by which human feelings can in turn set a work of art in motion?

Indeed, if Paul Emberson was less reticent about what reports of his research mean, it might transpire that the answer to this question need not continue to remain a matter of belief. In No. 11 (English edition) of *Anthro-Tech News* it says:

We mentioned in issue No. 9 [English edition, *Tr:*] that there are certain domains of our research about which we are reluctant to speak, for the reasons we gave. This domain is one of them. [3, p.7]

This unwillingness to report on *Anthro-Tech's* activities is not without its problems, especially when funding is being sought for its research. We learned from Martin Schüpbach, former chairman of Weleda AG board that, during his time as chairman and leader of Weleda's research group, he was also involved with Paul Emberson. His impression of Emberson's scientific method was other than good, as the following words from his letter in May 2010 to the Mathematical-Astronomical Section makes clear:

About 10-15 years ago I visited on my own initiative Emberson in Les Sciernes. He went to many people as well as Weleda for support for his research, and I wanted to form my own opinion. In his workshop were some tuning forks with resonance chambers underneath them open on two sides. He showed me the well-known experiment that the vibration after striking one fork was transmitted to another fork if the resonance chambers had their open sides facing each other. What was supposed to happen next, i. e. what actual experiments he was planning, he was unable to say, even though I eventually solemnly promised him not to mention his plans to anyone without his express agreement, and I urged him strongly. My overall impression was of course bad: I could not see any research project. Furthermore, through his vague answers, I got the increasing impression, that it was not just from ill will that he did not want to tell me his plans, but that he was simply not able to plan scientifically sound research work. He was far too self-preoccupied and constantly produced something like an esoteric fog round himself. With lots of money, he has built a room specially shielded with many chicanes of protective metals etc.

As a result of my visit, I saw to it that the Weleda Group gave no research funding to him, although he had applied to them for it. As a result, Emberson then applied without my knowledge to the French management of Weleda, and convinced them with his claims about the importance of his research so that Weleda Hunigue gave him money. After some time word reached me from Weleda France that Emberson had interesting results to show regarding magnetic measurements. I enquired after a report on the experiments or at least a brief interim summary of the experimental setup and the resulting measurements, but received nothing. As chairman of Weleda and leader of its

research group, I requested the results directly from Emberson but received nothing. I summoned the two French managers and asked them to demand a report, which they did as best they could, because they felt guilty that they had operated against my recommendation (I did not have direct authority to issue orders). This went back and forth for at least a year, then we wrote off the issue and the French manager of the pharmaceutical division had to agree that I had been right: we should never give research money before we are presented with a clearly set out project. A project statement of this kind is almost always a test of evidence that the researcher is scientifically genuinely competent and correct and understands planned investigating (even with anthroposophical research questions).

You will have already understood from my report I regard Emberson as a fraud who produces a lot of esoteric smoke round himself and uses it to live comfortably on money from supporters. [. . .] Only later after the contact with Emberson by Weleda, I learnt in a conversation on research projects with Dr. Georg Unger that he shared my opinion and was very angry that a lot of <anthroposophical> funding for research had been lost.

In issue No. 12 (English edition) of *Anthro-Tech News*, the *Harmogyra* is mentioned on only the first of its 26 pages (excluding the last two advertising a conference, *Tr*). There is no longer any mention of Keely. Instead, on the remaining 25 pages, the development of modern computer technology is presented. Paul Emberson describes in very dramatic pictures in his article entitled *50 Years From Now* what in his view this technology has as its spiritual background, and whither it will lead humanity. As we have already mentioned above, Paul Emberson sees in computer technology that Ahrimanic counterpart of Strader technology which was mentioned in the quote from Steiner reported by Hans Kühn (see page 26). Because, of course, according to this statement, this counterpart would have had to have developed by now, as the Strader machine was developed neither by 1938 nor at all.

In what follows, we compile an overview of these views of Paul Emberson that is intended to help anyone who wishes to reach their own conclusion. Unfortunately Paul Emberson never cited his sources for many of the references to Rudolf Steiner in his article. Its appeal can therefore only really be to people who, like Emberson, have so much experience of Rudolf Steiner's work that they are already familiar with all the references given without information about their sources; or he is addressing only people who are ready to accept the authority of Paul Emberson. Naturally it ought to be possible to test Paul Emberson's observations impartially with one's own judgement, quite independently of whether or not Rudolf Steiner had said this or that. The way comments by Rudolf Steiner, without references to the sources, are scattered through Paul Emberson's statements, as if somehow to reinforce them, might make readers who only want to understand give up.

In places where reference to the source is lacking, we have tried to discover the relevant passage in Rudolf Steiner's collected works, so as to enable readers to make their own checks. Where we were unable to do this or where, by interpretation of a source, we have not been able to arrive at the same view as Paul Emberson, we have drawn attention to this. Communication to clear up these differences would be highly desirable,

but unfortunately this has not happened so far. We shall go into this again at the end of this section. Several of the references to pages in the following relate to Anthro-Tech News issue No. 12 (English edition) of Autumn 2009.

On page 5, Paul Emberson writes that many of Rudolf Steiner's predictions about a positive evolution of humanity are based on humanity recognising the truth of spiritual science and putting it into practice. But this has obviously not happened, and so we must look at what Rudolf Steiner predicted would happen in such a case. This would be the collapse of civilisation at the end of the 20th century, and humanity would fall back into barbarity. Also events that were only designated for much later in evolution can happen prematurely. For this latter statement of Rudolf Steiner, Paul Emberson gives two sources: the lectures of 29 June 1919 and 6 August 1921. There Rudolf Steiner said:

If the materialistic world view were to prevail, then something would happen that I have already described: barrenness would spread over the earth and the war of all against all would accelerate. [44, Stuttgart, 29 June 1919, p. 246]

And:

Those who see, with a bleeding heart, the opponent who lived within the materialists of the nineteenth-century, that is to say, within the great majority of men, are aware of the necessity that the spiritualist within the human being should now rise out of subconsciousness into consciousness. He will then not stir up the instincts in his ahrimanic shape, but he will really be able to found upon the earth a human structure which may be accepted from a social standpoint.

In other words: If we allow things to take their course, in the manner in which they have taken their course under the influence of the world-conception which has arisen in the nineteenth century and in the form in which we can understand it, if we allow things to take this course, we shall face the war of all against all, at the end of the twentieth century. No matter what beautiful speeches may be held, no matter how much science may progress, we would inevitably have to face this war of all against all. We would see the gradual development of a type of humanity devoid of every kind of social instinct, but which would talk all the more of social questions.

The evolution of humanity needs a conscious spiritual impulse in order to live. [21, Dornach, 6 August 1921, p. 5]

What Rudolf Steiner meant by the war of all against all can be understood from other comments by him, for example in his lecture of 23 December 1904, which is also one of the references that Paul Emberson lists. In the following extract are several places that are central to his argumentation:

The downfall of post-Atlantean culture¹⁰ will be caused by the lack of morality. The Lemurian race was destroyed by fire, the Atlantean by water; ours

¹⁰For <post-Atlantean culture> the German original had *Wurzelrasse*, i. e. root race. Root race does not mean <race> in the modern sense of the term, but the whole of humanity during a period of time that Steiner and other authors denote as the post-Atlantean period, which lasts from 7,000 BC to 8,000 AD.

will be destroyed by the War of All against All, by evil, through the struggle of men with one another. Humanity will destroy itself in mutual strife. And the despairing thing — more desperately tragic than other catastrophes — will be that the blame will lie with human beings themselves.

A tiny handful of men will save themselves and pass over into the sixth epoch. This tiny handful will have developed complete selflessness. The others will make use of every imaginable skill and subtlety in the penetration and conquest of the physical forces of Nature, but without attaining the essential degree of selflessness. They will start the War of All against All, and that will be the cause of the destruction of our civilisation.

In the seventh post-Atlantean cultural epoch,¹¹ to be precise, this War of All against All will break out, in the most terrible way. Great and mighty forces will ensue from discoveries that will turn the entire globe into a kind of self-functioning electrical apparatus. The tiny handful will be protected in a way that cannot be discussed. [39, Berlin, 23 December 1904, p. 124f]

And this war or struggle of all against all could happen prematurely, even at the end of the 20th century, if, in the two previous statements, we take Rudolf Steiner at his word. Paul Emberson clearly thinks that today we have already reached this situation. Not only does he see in modern global politics and the disposition of many people the signs of the imminent collapse of civilisation, which, according to Rudolf Steiner, would not happen in normal evolution until after the sixth epoch, but also he sees in the creation of the Internet a premature arrival of that transformation of the globe into a self-functioning electrical apparatus.

On pages 9 and 10 Paul Emberson describes his terrifying vision of how, by the year 2060, people will be increasingly dependent on computers and machines so that ultimately — and here he refers to Rudolf Steiner — by 2200 human thinking will be banned throughout the world. Despite the missing reference to the source, we were able to find the relevant passage in Rudolf Steiner's lecture cycles; it was on 4 April 1919

Nowadays we have machines that add and subtract, don't we? That's very convenient because we no longer have to calculate. And this will be done with everything. It won't take long, a few centuries — then it will all be complete. Then nobody will have to think anymore, no longer have to deliberate, just press. For example, it will say <330 bales of cotton Liverpool>; today we still think something by that, don't we? But in future we'll just press, and the matter is settled. And so that the rigid structure of the future social order will not be disturbed, laws will be passed in which it will not exactly say <thinking is prohibited> but will have the effect that all individual thinking is excluded. That is the other pole against which we are working. In contrast life today is still not so unpleasant. For if we do not go beyond a certain limit

¹¹For <seventh post-Atlantean cultural epoch>, the German original had *siebenten Unterrasse*, i.e. seventh sub-race. Within the whole period of the root race — here post-Atlantean culture — there are seven sub-race periods, each approximately 2000 years long. The period of the seventh sub-race in the fifth root race goes from about 6,000 to 8,000 AD.

we are still allowed to think, are we not? Mind you, we must of course not go beyond a certain limit, but at least we are still allowed to think. But what I showed you yesterday is bound up with the evolution of the West. This means that spiritual-scientific evolution must be put into this overall evolution. You must be clear and objective about what is going on. You need to see that what seems like a paradox today will happen: in about the year 2200, give or take a few years, large-scale suppression of thinking will spread widely round the world. And spiritual science must be developed within this scenario. So much must be found — and it will be found — that there can be a corresponding counterweight against such tendencies in world evolution. [27, Berlin, 4 April 1916, p. 100f]

So Rudolf Steiner predicted this evolution, the beginnings of whose manifestation we can clearly see in advancing technological development and modern computerising. Though here he did not make the reservation, as he did with his prophesy of the premature war of all against all, that the suppression of thinking would happen only by a victory of the materialistic world view. Thus we understand Rudolf Steiner to be saying here that this evolution up to 2200 would be one that happens anyway, one against which a corresponding counterweight has to be brought, but which would not be able to prevent it.

Perhaps the quote just presented is the same one as Paul Emberson refers to on page 4:

Steiner predicted in effect that by about 2200 AD humanity in general will have degenerated into a race of feeble-minded, sub-human creatures ruled by machine intelligence. He said this could be averted only if vigorous measures were taken, on the basis of spiritual science.

As no source is given, we cannot say whether this is the case and whether Paul Emberson's extreme choice of words, in contrast to those of Rudolf Steiner, is explicable as artistic license.

Further statements about the reversion of humanity to barbarism if people generally do not accept the findings of spiritual-supersensible science, can be found in connection with Rudolf Steiner's comments on the work of Oswald Spengler. This man, using purely scientific methods in the usual sense, reckoned the year 2200 to be the time for the end of modern civilisation. According to Rudolf Steiner, he would be right in this if conscious spirituality was not taken up at all. See [37, Dornach, 2 July 1920, p. 148f and Dornach 16 July 1920, p. 260f] and [33, Dornach, 30 April 1921, p. 196].

What we have been unable to find is where Rudolf Steiner spoke of an approaching desertification of Europe <as far as the box-tree grows>, as Paul Emberson writes on page 4. This unfortunately means that it has not been possible for us to trace the context in which Rudolf Steiner said it.

On page 8, Paul Emberson quotes with its reference an extract from Rudolf Steiner's lecture of 15 November 1919:

If, in the future, people were to do nothing themselves toward acquiring a new wisdom, then, without their consciousness, the whole of culture would

become ahrimanic, and it would be easy for the influences issuing from Ahriman's incarnation to permeate all civilization on the earth.¹² Precautions must therefore be taken in regard to the streams by which the ahrimanic form of culture is furthered. What would be the result if people were to follow the strong inclination they have today to let things drift on as they are, without understanding and guiding into right channels those streams which lead to an ahrimanic culture? As soon as Ahriman incarnates at the destined time in the West, the whole of culture would be impregnated with his forces. What else would come in his train? Through certain stupendous acts he would bring to humanity all the clairvoyant knowledge which until then can be acquired only by dint of intense labor and effort. People could live on as materialists, they could eat and drink — as much as may be left after the war!¹³ — and there would be no need for any spiritual efforts. The ahrimanic streams would continue their unimpeded course. When Ahriman incarnates in the West at the appointed time, he would establish a great occult school for the practice of magic arts of the greatest grandeur, and what otherwise can be acquired only by strenuous effort would be poured over humankind.

Let it never be imagined that Ahriman will appear as a kind of hoaxer, playing mischievous tricks on human beings. No, indeed! Lovers of ease who refuse to have anything to do with spiritual science would fall prey to his magic, for by means of these stupendous magic arts he would be able to make great numbers of human beings into seers — but in such a way that the clairvoyance of each individual would be strictly differentiated. What one person would see, a second and a third would not see. Confusion would prevail and, in spite of being made receptive to clairvoyant wisdom, people would inevitably fall into strife on account of the sheer diversity of their visions. Ultimately, however, they would all be satisfied with their own particular vision, for each of them would be able to see into the spiritual world. In this way all culture on the earth would fall prey to Ahriman. Human beings would succumb to Ahriman simply through not having acquired by their own efforts what Ahriman is ready and able to give them. No more evil advice could be given than to say: «Stay just as you are! Ahriman will make all of you clairvoyant if you so desire. And you will desire it because Ahriman's power *will* be very great.» [32, Dornach, 15 November 1919, p. 64f]

Paul Emberson introduces this quotation by writing that Rudolf Steiner was directing his spiritual vision towards the year 1998 in which Ahriman-Sorat was destined to incarnate in several bodies [This reference to <several bodies> does not appear in the English edition [5], *Tr:*] in the west in 1998. The lecture quoted there made no mention of the date, nor of Sorat, nor of several bodies, but in the previous lectures of 27 October and 1 November 1919 the 3rd millennium was given as the period for the incarnation of Ahriman [32, Zurich, 27 October 1919, p.165 and Dornach, 1 November 1919, p. 207] A statement

¹²Here Rudolf Steiner is referring to the previous lectures. [32, Zürich, 27 October 1919, p. 160f, Dornach, 1 November 1919, p. 195f]

¹³Earlier in the same lecture Rudolf Steiner mentioned the Great War that had recently ended.

about the year 1998, which Paul Emberson may also have had in mind as he wrote this, occurs in Rudolf Steiner's lecture of 12 September 1924:

Before us lies the time of the third number 666: 1998. At the end of this century the time will come when Sorat will once again raise his head most strongly out of the waves of evolution to become the adversary of that appearance of Christ which those who have been prepared for it will already experience during the first half of the twentieth century when the Etheric Christ becomes visible. Only two thirds of the century have still to run before Sorat once again raises his head most mightily. [51, Dornach, 12 September 1924, p. 117]

Here we touch on a theme that cannot be dealt with in its full complexity in this article, namely Rudolf Steiner's comments on Christology. Although Paul Emberson refers to such comments in his discussion, we would rather keep the focus here on points that are directly connected with technology and its effects. As a contribution towards a basic understanding, we will just say that by the reappearance of the Christ in the etheric, as Rudolf Steiner put it, we are dealing with an event that is in progress and is a necessity for the positive evolution of humanity. Moreover, this event must be perceived by people. This calls for a willingness to do so, and a corresponding capacity for understanding. Other spirit beings would have an interest in it not happening. One such being is Ahriman, who has already been frequently mentioned here, or Sorat, a particularly Ahrimanic being mentioned in the last quote from Rudolf Steiner. For further study of this, the following works of Rudolf Steiner's Collected Works are recommended: GA 8, GA 104 and GA 342-346.

Thus, according to the comments in the passage just quoted, in the 3rd millennium we should expect the aforementioned incarnation of Ahriman. And the year 1998 would have been a point in time when an important effect of Sorat was to have been expected. We could not explain what Paul Emberson had in mind by stating that Ahriman-Sorat should incarnate in several bodies. Further on, on page 9, he says that for him digital electronics and the Internet are those things into which the <Sun-Demon> is incorporating itself. This means Sorat, who is referred to in other places as the Sun-demon.

Then Paul Emberson presents his very interesting perspective on the kind of experiences many people seek and find in computer games. He describes fantasy games in which creations are shown which borrow from monsters and heroes of myths and legends, or are adapted from them. To this extent, such presentations reflect spiritual realities, albeit in a caricature form. We can go along with these comments of Paul Emberson. For this reason we may be permitted to place beside them a few of our own observations.

If we take seriously the saying <no effect without being>, computer game characters, which obviously affect people as if they had a sort of life of their own, emanate from corresponding beings that work through these characters. And as computers — as with all technology, though possibly to an exceptional degree with computers — concern something which can be related to what Rudolf Steiner characterised as Ahriman, we would be permitted to refer to Ahrimanic beings who lie behind the creatures illustrated in computer games. So in the case of phantasy games these creatures mirror in caricature form

something spiritual, which people perhaps have in their unconscious, or for which they at least have a corresponding yearning.

This effect could be included in a long list of reasons why computer games exert such a fascination, in that they appeal to a yearning that calls for something that goes beyond material things. Instead of spiritual development in that direction, the games give just a substitute in the material world which can give rise to a real addiction. When people are constantly engaged in role-play, as for example in *World of Warcraft*, further developing their identity in the game would be an additional illusory substitute for providing their own personality in real life with a process that would be the true yearning of human beings.

That people can on the one hand identify with their game identity so strongly that it enters their dreams at night, yet on the other hand, in the game, constantly regard it from the outside as something alien, may strongly remind us what Rudolf Steiner and others have given as a basis of a path of spiritual development, namely that we learn to regard ourselves, our work-a-day selves as a stranger, so that, in the face of the good fortune and suffering that we meet with in life, we can maintain an inner tranquillity. Ultimately we then learn to recognise something inwardly that would be recognisable as a kind of higher being opposite the everyday one. We acquire this view of the higher being when we regard the everyday one from outside as a stranger. In a computer game we achieve something very similar, except that that, for the player, the everyday personality remains, and, instead, they regard their game identity from outside. Here once again the game offers a simplified, caricature substitute. With many role plays it is also possible for the player to design their character according to their own wishes at the beginning of the game, for example what it looks like and what abilities it has. This can obviously seem as a caricature portrayal of those things a soul works on between death and rebirth as requirements for meeting its needs during the following incarnation.

We share Paul Emberson's concerns regarding such computer games that a lot is questionable, and we thank him for his further indications in this regard. We leave readers to decide for themselves whether or not they can go along with the next step that Paul Emberson takes. For, Paul Emberson considers these computer games as part of what Rudolf Steiner predicted on 15 November 1919 in connection with the incarnation of Ahriman. In that lecture he mentioned that Ahriman would make people clairvoyant by means of stupendous magical arts. Paul Emberson sees these magic arts in computer games, and in the clairvoyance given by the player experiencing caricatures of spiritual truths in the games. But how we are supposed to fit to computer games the prediction that, according to Rudolf Steiner, this clairvoyance given by Ahriman would be different for each person, is not clear to us from Paul Emberson's comments. Is it not precisely that computer games are somewhat uniform, so that in reality each player gets the same experiences? The following sentences from pages 8 and 9 would perhaps be his explanation of this:

Yes, through the magic of the World Wide Web, into which the Sun-Demon is incorporating itself, gamers will acquire clairvoyance — but not objective, universally true clairvoyance of the supersensible world. They will have personalized, distorted visions of the subnatural worlds, which are also spiritual. They will acquire much knowledge of spiritual things, but it will be untrue

knowledge. Truth will be lost to much of humanity.

And:

What are the demonic beings, with which gamers will be brought into ever closer contact in the future through their <organ of perception> in the brain? Here we touch upon one of the deeper secrets of occultism. These beings are not only elementals; among them there are also Angels, Archangels and spiritual Beings of still higher rank, who have cast in their lot with Ahriman-Sorat, the great Sun-Demon. Through these once-lofty fallen Beings the gamer will learn to know those subsensible worlds which Rudolf Steiner called the evil astral world, evil Devachan and so on. But there is no universal truth in these evil counterparts of the supersensible worlds.

Before I leave the theme of computer games, I would like to discuss some further remarks about them by Paul Emberson. On page 5 he writes:

Today special gamers' seats with sensory feedback systems are commonplace; they are on sale in mail-order stores. [...] There are other kinds of accessories such as life-sized rifles and space-guns with wireless links to the computer. By pressing the trigger, the player causes his correspondingly armed avatar to shoot, and feels the recoil of the gun when it does so.

Such a passage might make people shudder. But it has not much to do with computer games in real life. In fact the accessories described by Paul Emberson are largely offered as novelties in larger amusement arcades. The number of gamers who have things like that at home may be of the order of tenths of a percent. Paul Emberson gives this information to show how the gamers are increasingly merging with the games. This concern is thoroughly justified, although in the current computer games, which are played with a mouse and touch pad on a screen, the merging is so far hardly very extreme in its intensity. Feedback devices that jerk or vibrate have already been with us for some time, but it has not been possible to develop them for personal computer games. Today, only the gamepads of game consoles connected to TVs offer vibration functions. As gamers want to immerse themselves purely mentally in the game, when doing so, any stimuli to their physical body act somewhat as a distraction. Therefore the game developers only sparingly use vibrations, for example when, in a film sequence within the gaming process, they want to intensify an explosion.

Meanwhile the game console manufacturers have tried to let gamers control their games by, instead of through pressing buttons, bodily movements registered on position sensors in the gamepad or via a camera. Whether such methods will become established remains to be seen. But in my view, long-established gamers, to become fully involved in the game, need no more than the input devices used so far, such as a mouse or a touch pad. What I would not rule out is that soon screens will be available that produce stereoscopic three dimensional images. That would eventually provide a new level of engagement for the gamer.

On page 8, Paul Emberson gives his view of what regular gamers can expect after death. On that page he first of all says that Rudolf Steiner indicated that, by means of

a technology which deviates from a moral technology, the souls of the dead would be forcibly introduced into artificially intelligent machines. Unfortunately, Paul Emberson does not give his source for where Rudolf Steiner said this. Paul Emberson fears such a fate for computer gamers, whose souls would remain in the Earth-realm because they would be too wedded to their Internet gaming identities:

When the body dies, the soul will remain in the Earth-realm, in the electromagnetic fields, bound to the avatar in the data banks of the World Wide Web.

That human souls, who have too strongly bound themselves to earthly enjoyments during life, remain in the Earth-realm after death, instead of freeing themselves from it, is a well-known spiritist motif. If this is the way things happen, then it would of course also be true for computer gamers. But Paul Emberson refers to a statement by Rudolf Steiner that would appear to be much more specific than this. Only by finding out what this statement is would we perhaps be able to understand what it is supposed to mean. Otherwise, unfortunately it appears that Paul Emberson is using this unverifiable reference to Rudolf Steiner to give his own comments more weight.

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Now we come to a discussion of some of Paul Emberson's comments connected with statements Rudolf Steiner made on 25 November 1917. This lecture is without doubt extremely demanding, and is not comprehensible without knowing on what it is premised. Therefore it is not at all possible, by means of isolated excerpts, to give a complete picture of its content as Rudolf Steiner presented it. Nevertheless, we believe that it is possible for us to share how we understand Paul Emberson's interpretation of it. And, in the relevant places, we allow ourselves to draw attention to the points where we cannot go along with his comments. It might indeed sometimes contribute to some clarification!

On page 6, Paul Emberson writes the following, after he has pictured for us how in future the operation of computers could function by means of technical implants.

Physical devices implanted in the cerebral cortex may belong to the past. The linking of the brain to the computer system could be realized by the sole use of remotely controlled force-fields — by a form of magnetic resonance, for example —, without the need for a material support. Rudolf Steiner hinted at a technique of this kind, in a lecture about future developments in technology given at Dornach on the 25th November 1917.

As we don't know which part of Rudolf Steiner's lecture Paul Emberson has in mind, we assume that it must be to do with the passage which we have already quoted on page 17:

...within our nervous system we are dying. These forces, these forces of dying away, will become more and more powerful. The bond will be established between these forces dying within man, which are related to the electric, magnetic forces, and the outer mechanical forces. Man will to a certain extent become his intentions, he will be able to direct his thoughts into the mechanical forces. Hitherto undiscovered forces within human nature will be discovered, forces that will work on outer electric and magnetic forces.

If this is correct, we can assume that Paul Emberson regards the hitherto undiscovered forces mentioned here as something other than the translation of human voices into wave movements in machines, which Steiner refers to immediately before in the same lecture. As we have already remarked above, this distinction is not immediately obvious to us. In addition we might ask ourselves: would it make sense, in the context of operating computers by means of magnetic resonance directly from the brain, to speak of hitherto undiscovered forces?

But regardless of whether or not Rudolf Steiner had indicated such a type of electronic interface between man and machine, we cannot deny that Paul Emberson presents a somewhat horrific vision, especially when we add to it the thoughts he offers on page 17. Before that, he admits that computers will never really be able to think. In doing so, he revises what he says on page 4, namely that machine intelligence will match or surpass that of the human brain within the next 40 years. We assume from this that intelligence and real thinking do not mean the same thing. Anyway, on page 17 it says:

But Ahriman-Sorat will incorporate into electronics another kind of component that is indeed a bearer of intelligence: the human being himself. If men's heads are wired into computer systems by brain-to-microprocessor links or whatever, then the Cosmic Intelligence that was brought into man's head-organization by the Beings of the highest hierarchies — the Seraphim, Cherubim and Thrones — will thereby be directed into the electromagnetic fields and electronic circuitry of the Internet. There it can be controlled and misused by the Sun Demon. There it will become Satanic Intelligence.

According to this, machines will indeed incorporate real thinking, in that a symbiosis between them and people will arise. And with this Ahriman and Sorat would have achieved their goal of bringing into their domain cosmic intelligence, to which they would otherwise have no access. Whether achieving such a goal is really among the interests of these beings has to be examined fundamentally before it is possible for us to draw any conclusions about it. In Paul Emberson's article it seems to be established a priori that it is the case.

On page 7, Paul Emberson thematises an additional evil intention in connection with Sorat. In reference to Rudolf Steiner, he says that the aim of certain American occult brotherhoods is to set Sorat in Christ's place. This comment is also made without giving the source, but it is probably the lecture cycle of November 1917. A relevant passage, which of course, just repeated out of context, can become almost impossible, would be this one of 18 November 1917:

These brotherhoods about which I have just spoken, which wish to confine the souls of human beings to the materialistic sphere, strive for the Christ to pass unnoticed through the twentieth century, for His coming as etheric individuality to be unobserved by human beings. This striving evolves under the influence of a quite definite idea, under a definite impulse of will. These brotherhoods have the urge to conquer the sphere of influence that is to come through Christ in the twentieth century and to continue further, to conquer it for another being, about which we shall speak later in more detail. There

are brotherhoods of the West who strive to battle the Christ impulse. They wish to place another individuality who has never yet appeared in the flesh but only as an etheric individuality, who is of a strong Ahrimanic nature, in place of Christ. [36, Dornach, 18 November 1917, p. 153]

The term <Sorat> was not used in this lecture. But we may conclude that this being is the one whom was meant. In the lecture of 25 November 1917 it says:

I called to your attention last time¹⁴ that the impulse of the Mystery of Golgotha was to be eliminated from the world by introducing another impulse from the West, a kind of Antichrist; from the direction of the East, the Christ impulse, as it appears in the twentieth century, is to be paralyzed by directing the attention, the interest, away from Christ appearing in the etheric. Those concerned with introducing the Antichrist instead of the Christ have endeavored to exploit what could work especially through the most materialistic forces, yet working spiritually with these materialistic forces. Above all they strive to exploit electricity and especially the earth's magnetism to have influence over the entire earth. [36, Dornach, 25 November 1917, p. 196]

Thus, whereas on the 18 November 1917 he was still speaking of <another being>, here he actually names the Antichrist, another term for whom is <Sorat>. So these were Rudolf Steiner's actual comments. That computer technology is what was being prophesied at that time seems to us to be an interpretation which would need further clarification.

In the two quotes just given occur the brotherhoods, which formed a central theme in these lectures of November 1917. Rudolf Steiner spoke of western and eastern brotherhoods that for various reasons want to hinder the effect of Christ returning in the etheric. The western would try to set the Antichrist in place of the Christ, whereas the eastern would try to arrange it that the return of Christ in the etheric would pass by mankind unnoticed.

Paul Emberson makes a few comments about these brotherhoods. However, for reasons of the complexity of this topic it is not possible to give a simple overview of to what extent his comments can be checked with the help of just what Rudolf Steiner said in the lecture cycle of November 1917. To do it properly, we would have to go through at least the lectures of 16, 18, 19 and 25 November in their entirety, which is obviously beyond the scope of this article. Therefore we leave it to interested readers to decide whether they would like to undertake this study. For this, the following questions are shared which, although they relate to Paul Emberson's comments, we cannot find in our study of Rudolf Steiner's lectures already mentioned. The Mathematical-Astronomical Section would be interested in further information on: why would the eastern brotherhoods, as Paul Emberson writes, work with electricity? Why is the constellation of Sagittarius to be associated with electricity, and those of Virgo and Pisces with sound and musical tones? Why is it assumed that the brotherhoods would have their eye on influencing technical development?

¹⁴By <last time> Rudolf Steiner probably did not mean the lecture we cited immediately above of 18 November 1917, for there was another one on 19 November 1917 before the one quoted here of 25 November. Indeed, on the 19th too, he spoke of those brotherhoods and their intentions.

On pages 11 to 14 Paul Emberson turns away from technology and gives his views on why the present-day Anthroposophical Society has not fulfilled the mission that Rudolf Steiner had envisaged for it. These comments also would need to be tested and presented in the same way as we have tried to do in this article regarding his comments relating to technology. But we will not go into them, as here we are largely dealing with questions relating to technology.

We shall likewise only very briefly outline what, on pages 11 to 26, Paul Emberson suggests for saving spiritual humanity: a different kind of training should be practised. For, what is usual today in anthroposophical circles was given by Rudolf Steiner for people born before the end of the 19th century. To those born after that he would have given different exercises and meditations. These exercises, according to Paul Emberson, would not only aim to develop the individuality, but the individual would work in a so-called power group, so that his exercise would be directed at enabling the others to experience development. Through doing this in selfless love, an exponential increase of power can be achieved, compared with the individual meditation. Such groups would be even more effective when they find their way into <life-sharing communities>. And it would be better still if such communities are founded in electrosmog-free zones away from general civilisation. In such groups, we would then see what Rudolf Steiner meant, in connection with the war of all against all mentioned above, when he spoke of a tiny handful of men being able to save themselves from this war.

In a report by the founder members of the Youth Group in the year 1922, which is contained in volume 266a of the complete works (GA 266a), Rudolf Steiner speaks of group meditation, for example:

He [Rudolf Steiner] seemed particularly pleased when he said: just as in the physical world social life comprises actions taken together, so also we aim towards joint action in the spiritual world, i. e. towards working socially in the supersensible realm. Accordingly, he wanted to know what we had in mind regarding actions, especially joint ones, in the spiritual world. As we responded very timidly that it would most probably involve meditating together on a spiritual content, he appeared to be satisfied. [50, Stuttgart, October 1922, p. 434]

And even Paul Emberson's reference on page 22 to increase of power can be found there:

Then he [Rudolf Steiner] said about the effect that such joint meditative exercises would have: «Let us say there are 10 of you and each of you has a force of <2> when exercising. Then the overall effect is not 2×10 but 2^{10} . In other words, the increase of power follows the law not of multiplication but of potentiation.» [50, Stuttgart, October 1922, p. 440]

The content of such a collective meditation was expressly requested from Rudolf Steiner. We cannot gather from this report that Steiner intended such work for anyone. In contrast, the facts speak for themselves, namely that Rudolf Steiner republished his fundamental works *Knowledge of the Higher Worlds and its Attainment and Occult Science — An Outline* in 1918 and 1925 respectively. In them he describes the path of anthroposophical

training. Why would he have republished these books if he regarded the path of training described in them as no longer valid after the end of the 19th century?

We were unable to find the source in which Rudolf Steiner himself used the expression «power group», as Paul Emberson claims on page 20. But it is certain that Paul Emberson is speaking to a need of many people at the present time that is focused on finding a further development of meditation methods. Initiatives such as the Goetheanum-Meditation-Worldwide-Workshops, which last took place in November 2010 in Dornach show that here too people are not inactive.

Furthermore we see the need for clarification in what concerns the effects of electromagnetic radiation on people. This is certainly not a topic that we can lightly dismiss. That material substance, i. e. including human tissues, is warmed when in an alternating electromagnetic field, is unquestionably demonstrated. Thus it is not possible to say that it has no effect on human beings. But when it comes to what effects such fields have on feeling and thinking, or on health and mental state, it is easy to reach a point where it is very difficult to discriminate between what is objective or subjective, or even self-suggested.

Paul Emberson covers this topic on pages 7, 16-17 and 19 of Anthro-Tech News No. 12 (English edition). He refers especially to Rudolf Steiner's comments about what is called the Ahrimanic human double. The following passage from the lecture on 16 November 1917 may give a picture of it:

A short time before we are born we are permeated by another being; in our terminology we would call it an Ahrimanic spirit-being. This is within us just as our own soul is within us. These beings spend their life using human beings in order to be able to be in the sphere where they want to be. These beings have an extraordinarily high intelligence and a significantly developed will, but no warmth of heart at all, nothing of what we call human soul warmth (*Gemüt*). Thus we go through life in such a way that we have both our souls and a double of this kind, who is much more clever, very much more clever than we are, who is very intelligent, but with a Mephistophelian intelligence, an Ahrimanic intelligence, and also an Ahrimanic will, a very strong will, a will that is much more akin to the nature-forces than our human will, which is regulated by the warmth of soul (*Gemüt*).

In the nineteenth century, natural science discovered that the nervous system is permeated by electrical forces. Natural science is right. But when natural scientists believe that the nerve-force that belongs to us as the basis of our conceptual life has something to do with electrical streams that go through our nerves, then they are incorrect. For the electrical streams, which are the forces put into us by the being I have just mentioned and described, do not belong to our own being at all. We carry electrical streams in us, but they are of a purely Ahrimanic nature. [40, St. Gallen, 16 November 1917, p. 54f.]

On page 35 (of the German edition [4]), after Paul Emberson himself quotes this place, he continues:

These strong-willed, extremely intelligent Ahrimanic doubles are those beings of whom Rudolf Steiner said that the cosmic forces that come from

Gemini and Sagittarius can be put to their service. That deviant technology mentioned in the main article [Anthro-Tech News, No. 12 (English edition), p. 8], which led to the development of modern electronics, has not been brought about for the interests of humankind. With this we get a glimpse of one of the most deeply shocking secrets of our time: the computer — the electronic brain — was developed not for our sake, but for the Ahrimanic double. With extreme cunning, Ahriman has deceived humanity.

That computers, like all technology, are attributable to inspiration by Ahrimanic influences, is arguably quite correct, provided we are referring to what Rudolf Steiner says, which we too will further examine below. The question then is simply: what are the consequences to be drawn from this. Paul Emberson obviously thinks that modern electronics has a particular effect on what Rudolf Steiner calls the Ahrimanic double, because it is this double that is responsible for the electric currents in the human body. This is certainly one possibility, that could be put forward as a proposition. But if we are asked where Rudolf Steiner said that the forces from Gemini and Sagittarius could be put to serve these doubles, then we have to fend for ourselves. In the lecture of 25 November 1917 Rudolf Steiner said merely the following:

It was known already in antiquity that this had something to do with the cosmos, and it is known even today by exoteric scientists that, behind Gemini in the Zodiac, positive and negative magnetism are hidden in some way. An attempt will be made to paralyze what is to be won through the revelation of the duality in the cosmos, to paralyze it in a materialistic, egotistical way through the forces that stream toward humanity especially from Gemini and can be put completely at the service of the double. With other brotherhoods, which above all wish to bypass the Mystery of Golgotha, it is a matter of exploiting the twofold nature of the human being. [36, Dornach, 25 November 1917, p. 198f]

There it says that the forces emanating from Gemini could be put at the service of the Ahrimanic double. The extent to which these forces can be equated with those emanating from Sagittarius has yet to be explained.

Then Paul Emberson continues by saying that the electromagnetic processes in the nervous system do not belong to it and in fact should not occur there. Instead of them, the nerve substance should contain <only those subtle oscillations that emanate from the astral body and are produced in the nerves through the activity of the etheric body>, as it says on page 35 (of the German edition [4]); and on the following page it says that, according to Rudolf Steiner, this should involve extremely subtle oscillations during spiritual thinking. We have been unable to trace the source of this in Rudolf Steiner's works.

According to Paul Emberson, in cells occupied by the Ahrimanic double, alternating electromagnetic fields in the environment (i. e. electrosmog) are supposed to induce alien oscillations so that meditative thought is no longer possible. This is also probably how he justifies his comment on page 7 that perception of the Christ will be eliminated by electrosmog.

In the same context on page 7, Paul Emberson also says that modern communications transmissions involve <harsh square-wave radiation> which has a jagged waveform.

This statement would need further explanation because Paul Emberson cannot be referring to the physical properties of these transmitted waves. On a visit to Anthro-Tech, which we shall speak about below, he demonstrated the crackling noise caused by a mobile telephone placed close to a loudspeaker membrane. This happens because the transmitted waves are pulsed. And we could of course consider how pulsed waves affect the human being. But despite their transmission in pulses, the physical waves are always shaped like sine waves. Paul Emberson's description could mislead readers who are not familiar with this field. This discussion is aimed at preventing this.

What certainly exists are the so called square-waves that Paul Emberson probably meant on page 33 (of the German edition [4]) where he referred to the <square-wave current of digital electronics>. Such square-wave oscillations can be approximated to square-edged shapes through superimposing in harmony oscillations of differing frequencies. These are used in computer chips among other things, where it involves being able to distinguish between different values of charge. But they are not used in communications transmission. Why Paul Emberson called them a <much worse kind of alternating current> is not clear to us, especially as square-wave oscillations are also not used in power transmission, but only for signal processing or producing sounds.

In the following we would like to discuss a few additional quotes from Rudolf Steiner, some of which Paul Emberson used in his argumentation. Through a detailed presentation of these quotes, we hope that readers will be provided with an adequate overview. On page 35 (of the German edition [4]), Paul Emberson quotes Rudolf Steiner's lecture of 28 January 1923 in that he writes:

Rudolf Steiner's statements do not always concern permanent biological damage of the organism but just occasionally the disturbance of these human vibrations through induced oscillations. As soon as these alien stimuli are sufficiently strong to overwhelm the natural vibrations, intuitive or meditative thinking is finished. This is exactly what Rudolf Steiner observed in the realm of thinking, and he said:

If we now observe the connections that existed before the present age of electricity, we may say that they allowed the natural scientist of that time to imagine, at least abstractly, the spiritual in Nature. ... electricity then began to affect man's nerves, expelling from them everything that tended towards the spiritual.

Thus, here we may really ask ourselves whether Rudolf Steiner had in fact spoken about electricity having a direct effect on the nerves, and that, because of this, intuitive or meditative thinking would be rendered impossible. We would like to repeat in more detail the lecture passage given by Paul Emberson so as to be able to return to this question immediately after it. Thus Rudolf Steiner said on 28 January 1923:

The cultural ingredient that now permeates our whole external civilization began to rise to the surface at the turn of the 18th and 19th century. Think of the immense contrast between the present time and that time when a certain physicist prepared a frog's leg which accidentally came into contact with the window ... the frog's leg quivered, and so he discovered electricity! How

long ago was that? – Less than 150 years ago, yet electricity is now a cultural ingredient. Indeed, it is far more than this! You see, when the men of my age were young fellows, not one of them dreamt of speaking of the atoms in the sphere of physics otherwise than of tiny, inelastic, or even elastic spheres colliding with one another, and so forth, and then they calculated the results of these collisions. At that time, no one would have dreamt of conceiving the atom without further ado in the way which we conceive of it today: namely, as an electron, as an entity consisting altogether of electricity.

Human thought has spun itself altogether into electricity, and this occurred not so very long ago. Today we speak of the atoms as if they were small suns, centres around which electricity accumulates; we speak of electrons. Thus we suspect electricity everywhere, when we penetrate into the world's mechanism. This is where our civilization so closely connects itself with a definite manner of thinking. If people would not travel on electric tramcars they would not think that the atoms are full of electricity.

If we now observe the connections that existed before the present age of electricity, we may say that they allowed the natural scientist of that time to imagine, at least abstractly, the spiritual in Nature. Although a tiny rest of scholastic realism remained, electricity then began to affect man's nerves, expelling from them everything that tended towards the spiritual.

Things went still further. Even light, the honest light that surges through the world's spaces, was gradually defamed and brought into the ill repute of resembling electricity! When we speak today, as I am speaking now, then the people whose heads are deeply submerged in the electric wave of civilization necessarily believe that this is utter nonsense. But this is only due to the fact that the people whose heads consider such things as nonsense drag themselves along (like dogs whose tongues are hanging out because of the heat) with a load of history, a load of historical concepts on their backs, so that they cannot speak in an unprejudiced way, from out of the immediate present.

You see, when we speak of electricity, we enter a sphere that presents a different aspect to the imaginative vision than that of the other spheres of Nature. So long as man remained within the light, within the world of sound, that is to say, in the spheres of optics and acoustics, it was not necessary to judge morally that which appeared in a stone, a plant, or an animal, either as colours in the sphere of light, or as sound in the world of tones; it was not necessary to judge these things morally, because he still possessed an echo, weak though it was, of the reality of concepts and ideas. Electricity, however, drove out this echo. And if today we are, on the one hand, unable to discover a reality in the world of moral impulses, we are, on the other hand, even less able to discover a moral essence in that sphere which is now considered to be the most important constituent of Nature.

Today, if we were to ascribe a real power to moral impulses, if we were to say that they contain a force enabling them to become sensory reality in the same

way in which a plant's seed becomes sensory reality, we would almost be looked upon as fools. And if someone were to come along today and ascribe moral impulses to the forces of Nature, he would be looked upon as a complete fool! But if you have ever allowed an electric current to pass through your nervous system, so as to experience it consciously with a genuine power of vision, you will realize that electricity in Nature is not merely a current but that electricity in Nature is, at the same time, a moral element. When we enter the sphere of electricity, we penetrate simultaneously into a moral sphere. If you connect your knuckle at any point with a closed current, you will immediately feel that your inner life extends to an inner sphere of your being, where the moral element comes to the surface, so that the electricity pertaining to the human being cannot be sought in any other sphere than that sphere which is also the source of the moral impulses. Those who can experience the whole extent of electricity, experience at the same time the moral element in Nature. Modern physicists have conjured and juggled about with electricity in a strange way, without the least suspicion. They imagine the atom as something electric, and through the general state of consciousness of the present time, they forget that whenever they think of an atom as an electric entity, they must ascribe a moral impulse to this atom, indeed, to every atom. At the same time, they must raise it to the rank of a moral entity. . . . But I am not speaking correctly . . . for, in reality, when we transform an atom into an electron, we do not transform it into a moral, but into an immoral entity! Electricity contains, to be sure, moral impulses, impulses of Nature, but these impulses are immoral; they are instincts of evil, which must be overcome by the higher world.

The greatest contrast to electricity is light. If we look upon light as electricity we confuse good and evil. We lose sight of the true conception of evil in the order of Nature, if we do not realize that through the electrification of the atoms we transform them into carriers of evil; we do not only transform them into carriers of death, as explained in my last lecture, but into carriers of evil. When we think of them as atoms, in general, when we imagine matter in the form of atoms, we transform these atoms into carriers of death; but when we electrify matter, Nature is conceived as something evil. For electric atoms are little demons of Evil. [22, Dornach, 28 January 1923, p. 1ff]

We regard these words of Rudolf Steiner as being impossible to be misunderstood, because by speaking of the nature of electricity as immoral and even evil he goes beyond his fundamental approach. A view that one encounters now and then amongst anthroposophists, one that cannot be found in these comments by Rudolf Steiner, is that electricity is neither immoral nor moral, i. e. is amoral, and that it is only a matter of how it is applied by people. But we regard as not immediately clear whether, by the sentence that electricity has affected the nerves of people today, and has expelled from them everything that tended towards the spiritual, he really meant an effect of electricity on the nerves like that caused by electrosmog. In this lecture Rudolf Steiner was talking about the effect a world outlook would have which regarded electricity as fundamental to ev-

everything. Moreover, it is interesting that he also said that travelling by electric tramcar would have an effect on how we see the world. Paul Emberson writes on page 30 (of the German edition [4]), without citing his source, though it is most likely refer to this lecture of 28 January 1923, that Rudolf Steiner had said that in electricity are immoral impulses and evil instincts. But what Rudolf Steiner said in direct connection with these comments certainly cannot be concealed, as it gives a very different view of how people today would have to regard the influences of technology and electricity from that inferred by Paul Emberson. In the same lecture, Rudolf Steiner said:

If Anthroposophy were to adopt a fanatic attitude, if Anthroposophy were ascetic, it would thunder against the modern civilization based on electricity. Of course, this would be nonsense, for only world-conceptions that do not reckon with reality can speak in that way. They may say: «Oh, this is ahri-manic! Let us avoid it!» – But this can only be done in an abstract way. For the very people who thunder against Ahriman, and tell us to beware of him, go downstairs after their sectarian meeting and enter an electric tramcar! So that all their thundering against Ahriman, no matter how holy it may sound, is (excuse the trivial expression) simply rubbish. We cannot shut our eyes to the fact that we must live with Ahriman. But we must live with him in the right way, that is to say, we must not allow him to have the upper hand. [22, Dornach, 28 January 1923, p. 181f]

And at the end of this lecture he said:

And we must summon the courage to use moral concepts, in this case anti-moral, when we speak about electricity. Such things give people today the creeps. They find it uncomfortable when they have to admit that when they get into a tram they are sitting on Ahriman's seat. So they would rather mystify it away, hold sectarian gatherings, in which they say: we need to guard ourselves against Ahriman. – But it is not a matter of that but of our realising that the evolution of the earth is henceforth one in which the forces of nature themselves that work into cultural life have to be Ahrimanised. And it is precisely this that we should be aware of, because only that way will we find the right direction. [34, Dornach, 28 January 1923, p. 197f]

If we take these words of Rudolf Steiner seriously, it is difficult for us to see any course worth pursuing in Paul Emberson's suggestions of withdrawing from all civilisation in which computers are used and electromog occurs. What Paul Emberson would obviously respond with is that even present day technology has reached such an extreme that it can no longer be possible for us to avoid letting ourselves be overwhelmed by it, as Rudolf Steiner urged vis-à-vis the technology of his time. Whether this is true, we shall leave as an open question.

On page 16-17 (English edition) Paul Emberson says that Rudolf Steiner had warned about the effects of wireless transmission. He refers to an answer Rudolf Steiner gave to a question asked on 16 June 1924 in the context of the Koberwitz lectures on agriculture. The same source is, in a similar context, mentioned on page 33 (of the German edition

[4]). At those lectures, Rudolf Steiner answered as follows to the question as to whether foodstuffs may be conserved by electricity:

What would you attain by so doing? You must consider the whole part played by electricity in Nature. It is at least comforting that voices are now being heard in America – where, on the whole, a better gift of observation is appearing than in Europe – voices, I mean, to the effect that human beings cannot go on developing in the same way in an atmosphere permeated on all sides by electric currents and radiations. It has an influence on the whole development of man.

This is quite true; man's inner life will become different if these things are carried as far as is now intended. It makes a difference whether you simply supply a certain district with steam-engines or electrify the railway lines. Steam works more consciously, whereas electricity has an appallingly unconscious influence; people simply do not know where certain things are coming from. Without a doubt, there is a trend of evolution in the following direction. Consider how electricity is now being used above the earth as radiant and as conducted electricity, to carry the news as quickly as possible from one place to another. This life of men in the midst of electricity, notably radiant electricity, will presently affect them in such a way that they will no longer be able to understand the news which they receive so rapidly. The effect is to damp down their intelligence. Such effects are already to be seen to-day. Even to-day you can notice how people understand the things that come to them with far greater difficulty than they did a few decades ago. It is comforting that from America, at least, a certain perception of these facts is at last beginning to arise.

It is a remarkable fact that whenever something new appears, as a rule in the early stages it is heralded as a remedy – a means of healing. Then the prophets get hold of it. It is strange, where a new thing appears, clairvoyant perception is often reduced to a very human level! Here is a man who makes all sorts of prophecies about the healing powers of electricity, where no such thing would previously have occurred to him. Things become fashionable! No one was able to imagine healing people by electricity so long as electricity was not there. Now – not because it is there, but because it has become the fashion – now it is suddenly proclaimed as a means of healing. Electricity – applied as radiant electricity — is often no more a means of healing than it would be to take tiny little needles and prick the patient all over with them. It is not the electricity – it is the shock that has the healing effect.

Now you must not forget that electricity always works on the higher organisation, the head-organisation both of man and animal; and correspondingly, on the root-organisation in the plant. It works very strongly there. If, therefore, you use electricity in this way – if you pour electricity through the foodstuffs – you create foodstuffs which will gradually cause the animal that feeds on them to grow sclerotic. It is a slow process; it will not be observed at once.

The first thing will be, that in one way or another the animals will die sooner than they should. Electricity will not at first be recognised as the cause; it will be ascribed to all manner of other things.

Electricity, once for all, is not intended to work into the realm of the living – it is not meant to help living things especially; it cannot do so. You must know that electricity is at a lower level than that of living things. Whatever is alive – the higher it is, the more it will tend to ward off electricity. It is a definite repulsion. If now you train a living thing to use its means of defence where there is nothing for it to ward off, the living creature will thereby become nervous or fidgety, and eventually sclerotic. [31, Koberwitz, 16 June 1924, p. 153 f.]

Thus Rudolf Steiner said very clearly there that if people live in an atmosphere permeated on all sides by electric currents and radiations, electricity would have an influence on their development. He includes in this even the use of radiating electricity for the transmission of news. So in this respect we can hardly accuse Paul Emberson of arriving at an invalid interpretation. Rudolf Steiner's statements that electricity is not supposed to work into the living, if taken seriously, indeed throws a disturbing light on all alternating electric fields, which have since become a ubiquitous phenomenon in our civilisation. Furthermore, Paul Emberson writes on page 32 (of the German edition[4]) that Rudolf Steiner was against using alternating current instead of direct current. However, unfortunately again no source is given for this.

A quote from Rudolf Steiner on 11 July 1923, that Paul Emberson mentions on page 19 (English edition[5]), contains comments which likewise can be related to electrosmog:

Compare the modern world with that of a century ago. You will say, when you compare the modern world with that of a century ago, there is overall a big difference between the present day and the times a century ago; but one of the greatest differences, that is not taken into account, is that we have our atmosphere permeated by nothing but telegraph wires, telephone wires and so on. Now, in Europe it appears that the growth of wires throughout the environment is still child's play compared with America. That is why there is over there a gleam of realisation what this means for human beings. There they are finally suspecting that people do not remain unaffected by what whizzes through the air with a life of its own, that the human being is becoming a thoroughgoing induction apparatus. Consider that an alternating current flows in your nerves and a direct current in your blood. People today have all that in them, but hardly anyone mentions it. Ahrimanic forces of utmost importance are absorbed by people today, and they can do nothing to prevent it. People think about what is possible and what is completely impossible, but modern humanity thinks least about precisely those stark realities. For example, they should for once discuss the extent to which there is a difference between Goethe and the people today and that Goethe was not yet wrapped round by telephone wires. Please realise that the present desolation of the human soul is significantly connected with all this. [48, Stuttgart, 11 July 1923, p. 14]

With this we near the end of what concerns our discussion so far of Paul Emberson's statements and, unfortunately for us, his not always verifiable references to Rudolf Steiner's work. Readers may perhaps have already wondered if an attempt has been made to contact Paul Emberson in person, in order to resolve the unclarities. Indeed, this was attempted, albeit in an unconventional way. Because of what Paul Emberson had presented publicly, with his issue of *Anthro-Tech News* No. 12 (English edition) [or No. 10 (German edition), *Tr:*] in the autumn of 2009, containing his discussion of technology and the role of the Anthroposophical Society, the Mathematical-Astronomical Section at the Goetheanum decided to work in an equally public way on clarifying the points raised in that publication. A further reason for this was the experiences that people had already had in previous years with Paul Emberson and his reticence. Therefore in April 2010 a 10-page summary of Paul Emberson's unexplained statements was drafted and sent to various people known to the Mathematical-Astronomical Section, with an appeal for help with clarification. The same summary was sent personally addressed to Paul Emberson.

Through the response to this appeal, it was at least possible to establish where occurred the statement by Rudolf Steiner that Strader technology should have already been invented in the 1930s. We have already presented this above, but, at the time of our appeal, this fact was unknown to us. Furthermore, none of the points received clarification and an answer from Paul Emberson was also not forthcoming.

Then in June 2010 there was a meeting of *Anthro-Tech* in Les Sciernes d'Albeuve at which Bodo von Plato of the Vorstand (Executive Council) of the Anthroposophical Society met Paul Emberson in order to discuss his relationship to the Society and to the School of Spiritual Science, and to establish why, with all the criticism he directs at these two institutions, he seemed neither to be interested in a dialogue, nor had so far explained his resignation from the Society and the School. The author of this article was able to be at this meeting, in the hope that, through conversation with Paul Emberson in person, more clarity would be obtained about these statements. Bodo von Plato had wanted to bring with him to the meeting an additional young anthroposophist called Louis Defèche, who had previously worked on a critique of Paul Emberson's writings. Before the meeting, Paul Emberson made it clear that he did not wish to receive Louis Defèche.

The *Anthro-Tech* meeting took place in a friendly atmosphere. However, Paul Emberson made it clear at the outset that he was primarily interested in discussing with Bodo von Plato the issues relating to his relationship to the Anthroposophical Society and the School of Spiritual Science. He appeared to have no interest in clarifying the unresolved issues of the Mathematical-Astronomical Section. Later, he revealed that he found nothing of value to go into in the methods and style of the appeal prepared by the Section. The way it was written spoke to him of *computer thinking* that merely sought <yes> or <no> answers. To the issue of why he cited Steiner without giving his sources, he answered to the effect that the reader would then only look them up in the collected works and not come to reflect on them. Why, despite this, he then referred to Rudolf Steiner, instead of presenting his views as his own, he justified by saying that he felt it his duty to do this if his views were covered by statements of Rudolf Steiner, and that he was constantly studying Steiner's work. When asked again why then giving the source demanded too much, the argumentation had reached its starting point and he finally agreed to make available the missing source information. However, he left open the date by which he would find

the time to do this, and the Mathematical-Astronomical Section has so far not received it.

An extensive tour of the workshops, which are equipped with expensive and to some extent older machines from the watch industry took up so much time that it was no longer possible to see what was being developed or achieved by these machines. A demonstration of technology investigated by Anthro-Tech, such as the Harmogyra, also had to be ruled out, as the agreed conversation took priority. As already mentioned, the whole meeting passed in a courteous and friendly atmosphere. At the end, the impression remained that we will have to take one step at a time regarding not only clarifying the technology issues but also the relationship of Paul Emberson to the Anthroposophical Society and the School of Spiritual Science. In the week after the meeting, Bodo von Plato sent to Paul Emberson a friendly letter summarising the meeting. However, Paul Emberson has so far not responded to it, so only time will tell what will be the next points of contact between Anthro-Tech and the Goetheanum or the Mathematical-Astronomical Section.

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We have come across in our own researches further places in Rudolf Steiner's lectures that are connected with the topic discussed here. We should therefore like to close by presenting these and allowing ourselves afterwards to present an outlook on the direction in which studies could go in future.

Among the statements that we can regard as presented on the theme of electrosmog is without doubt the following of 11 July 1923 where he said:

I should like to repeat here what I have already been required to say in other places. In some areas of the world we are finally reaching a point in which there is a difference between now and a century ago. One speaks of Goethe, how he lived in, let us say, 1823, without emphasizing something that they are beginning to realize over there in America, where it is much more evident than it is in Europe. Consider that in the Weimar that Goethe went about in – or wherever Goethe went – he was not surrounded by telegraph wires, there were no telephone cables etc. There the air was not criss-crossed by telegraph cables and electricity cables. Now consider just for once how subtle the instruments are wherever we send out the effect of electricity. But people are surrounded by such equipment. People in America are realising that having electrical cables etc. buzzing around them everywhere has a effect on the physical human being. Goethe travelled around without his body having induction currents. Nowadays we can travel somewhere far away – but we cannot get so far away that the electrical cables do not follow us. They constantly induce currents in us. Goethe was not exposed to such currents. Humanity absorbs all that in the physical body, making the physical body such that the soul does not enter it. We should be clear about this: in the times when there were no electric currents, when the air did not have electric cables whizzing through it, it was easier to be human. Because then these Ah-ri-manic forces were not constantly present which take one's body away even when awake. Then it was unnecessary for people to work so hard to reach the spirit. For, only when we enter into ourselves do we really reach the spirit. Therefore, to be a human being at all, it is necessary today to expend a much

greater spiritual effort than it was a century ago.

I would not dream of being reactionary and saying for instance: get rid of all that stuff, all those products of modern culture. That is not my intention. But people today need the immediate devotion to the spirit that spiritual science gives them, so that, through its stronger experiencing of the spirit, they can in fact also be strengthened vis-à-vis precisely those forces that arise with modern culture hardening our physical bodies and taking them from us. Otherwise, it will turn out that the human being will miss its connection in the evolution of humanity. [45, Stuttgart, 11 July 1923, p. 108f]

Thus, Rudolf Steiner's statements presented here clearly indicate that in his view electrical cables send into the environment effects on people that are to be considered serious. When we consider how greatly such influences have increased these days, compared with those Rudolf Steiner was aware of in 1923 from telegraph wires etc., we may really wonder whether, faced with such effects entering us, it is still possible to expend the spiritual capacities needed to be human, as Steiner put it. Paul Emberson would say that it would be possible, but only through the new kind of spiritual training he suggests, and through avoiding modern electronics. Here we leave this as an open question, but we would like to add to that a few more statements by Rudolf Steiner which, in our view, fit into this context.

These concern passages which all touch on the fact that any technology is associated with harmful influences on people. However, these passages constantly remind us that it would not be right if, because of these influences, we keep away from this technology. However, instead of merely paraphrasing or interpreting Rudolf Steiner, here we let what he said for the first time on 5 December 1907, during his lecture *Illusory Illness and the Feverish Pursuit of Health*, to speak for itself:

During the cultural process, men are continually subject to other conditions. This is the nature of culture. Otherwise, there would be no development, no history of human beings. What we observed as experiments with animals as to the effect on the physical body¹⁵ appears as the opposite in men. Man, because he has an ego, has the capacity of inwardly digesting the impressions that storm in upon him from our culture. He is inwardly active, first adapts his astral body to the changed conditions and then reorganizes it. Thus, as he keeps evolving, he comes to higher cultures and always receives new impressions. At first these express themselves in feelings and perceptions. Were he now to remain passive, inactive, were there no activity stirred up in him, no creativity, then he would become stunted and sick as does the animal. This it is that distinguishes the human being, that he can adapt himself and, from out the astral body, gradually change the etheric and physical bodies. He must be inwardly up to this transformation, however, otherwise there is no adjustment of the balance between what comes to him from the outside and what counters it from within. A man would be crushed by the impressions from outside

¹⁵Previously Rudolf Steiner spoke about how animals in captivity develop physical illnesses as decadence phenomena, because they cannot adapt themselves to the changed living conditions

as the animal in a cage is crushed by them because it has no inner creativity. But man has his inner activity. Against the spiritual lights around him, he must be able to set some-thing, in a sense, to counter with eyes, with seeing.

Whatever turns out as a disharmony between impressions from the outside and the inner life is unhealthy. It is in the big cities that we can see what happens when impressions from the outside grow ever more powerful. When we tear along faster and faster, when we must let rumbling sounds and hurrying people go by us without taking a stance, without countering them – this is unhealthy. As regards this position towards the outside, the intellect is the least important, but what is important depends upon whether our feelings, our soul, indeed, our living bodies, can take a position towards it. This we will understand rightly through the consideration of a definite illness that appears especially in our time, and that did not occur earlier. A person not accustomed to absorb much, one poor in soul, is brought up against all kinds of impressions so that he finds himself standing before a quite incomprehensible outer world. This is the case with many feminine natures. Their inner being is too weak, too little organized to digest it all. But we find this condition also in many masculine persons. The consequences result in the illnesses of hysteria. Everything connected with hysteria is derived from this imbalance.

Another form of illness takes hold when our lives bring us to the position of wanting to understand too much of what is set before us in the outer world. It is mostly the case with men who suffer with causality illness. One accustoms oneself always to ask, «Why? why? why? why?» It is even said that the human being must be the never-resting causality animal. Today, because we are too polite, we may no longer give the idle questioner the answer that a founder of religion gave. When he was asked, «What did God do before the creation of the world» he answered, «He cut rods for those who ask useless questions.» This is exactly the opposite condition of the hysterical one. Here the restless longing for the solving of enigmas is too great. This is only a symptom of an inner attitude. The one who never wearies of always asking, «Why?» has a different constitution from other people. He gives signs of a different inner working of spiritual and bodily functions from the person who asks «Why» only on outer provocation. This leads to all hypochondriacal conditions, from the lightest case to the deepest illusory illness. So it is that the cultural process affects human beings. Man must above all have an open mind in order always to be able to digest what comes towards him. Now we can also make it clear to ourselves why so many people have the urge to shed this culture, to have done with this life. They are no longer up to what presses in upon them. They strive to get out. These are always weak natures who do not know how to counter the outer impressions with a mighty inner response. [29, Munich, 5 December 1907, p. 24f]

Thus, setting a mighty inner impression against those coming from outside would be a remedy with which we would have to treat cultural evolution. So do computers, mobile telephones and electromagnetic fields belong amongst such outer impressions, so that,

for us to be able to stand their overwhelmingly harmful effects, we set against them only a strong inner impression? And with these same cultural impressions, would it be the case that it is people with weak natures who strive to avoid the impressions from them? A further passage by Rudolf Steiner in which he spoke of outer Ahrimanic influences occurs in a lecture seven years after the one just quoted, on 28 December 1914, when he also did not fail to mention the harmful effects of our increasingly technicalised environment:

Now man can reach the position he must occupy if he is to be truly Man only by seeking for it in his inner life, by being able to descend so far into the depths of his soul that he there finds the forces which unite him with the spiritual realities of the Cosmos in which he is embedded. He can be, and indeed already has been, severed from these cosmic realities through sense-perception and intellectual thinking, and now also, as we have seen, because modern life crams him through and through with Ahrimanic spirits.

It is only by descending into the depths of his own inner life that man comes into connection with the divine-spiritual Beings who work for his good, the normally evolving Beings of the spiritual Hierarchies. This coming together with the spiritual Hierarchies for whom we have in truth been spiritually born, this community with them, is rendered very much more difficult for man by the fact that the world is becoming more and more steeped in the milieu created by modern technical science. Man is as it were torn out of the spiritual-cosmic setting, and the forces he must unfold in order to be linked with the spirit-and-soul of the Cosmos are stifled and suppressed within him.

Therefore one who has already taken the first steps on the way to initiation perceives that everything which permeates modern life in the form of machinery and the like presses into the life of the human spirit-and-soul in such a way that a great deal is killed, destroyed. And he becomes aware that this destruction makes it particularly hard for him to develop those inner forces which bring him into connection with the lawful – please do not misunderstand the word – the lawful spiritual Beings of the Hierarchies.

If while in a railway carriage or steamer someone who has taken the first steps towards initiation wants to find his way into the spiritual world in meditation, he naturally makes efforts to develop the power of vision and seership which will bear him thither; but he perceives how the Ahrimanic world fills him with everything that opposes this striving to reach the spiritual world, and the battle then waged is intensely fierce. It is an inner battle, producing in the etheric body an experience of being crushed, hacked to pieces. Naturally, those who have taken no steps on the way to initiation are also involved in this battle, the only difference being that those who have taken these steps are consciously aware of what is happening. Everybody is obliged to undergo the battle; in its effects it is experienced by everybody. There would be no greater fallacy than to say: We must rebel against what technical science has brought to us in modern life, we must protect ourselves from Ahriman, we must withdraw from this modern life.

In a certain respect such an attitude would be an indication of spiritual cowardice. The real remedy lies, not in allowing the forces of the soul to weaken and to withdraw from modern life, but in so strengthening these forces that its pandemonium can be endured. World-karma demands a courageous attitude to modern life, and that is why genuine Spiritual Science calls at the very outset for effort, really strenuous effort on the part of the human soul.

One hears it said so often: The literature of Spiritual Science available to us is written in such a difficult style; it demands such effort and such intense development of the forces of the soul if any real headway is to be made. «Well-meaning» people – the adjective in inverted commas – are always coming forward with the suggestion that difficult passages should be simplified for their fellow-men; they want to trivialise – this I say without inverted commas – what is written in a rather difficult style.

But it is of the very essence of Spiritual Science that activity should be demanded of the soul; that Spiritual Science should not be easy to master. For in Spiritual Science it is not a matter merely of absorbing what is said about one thing or another, but of how things are absorbed – by dint of effort and activity of the soul. What Spiritual Science has to offer must be assimilated with sweat of the brow. That is a sine qua non in the whole business – forgive the colloquialism.

To try to escape from the difficult concepts and ideas presented in Spiritual Science indicates that its very essence has been misunderstood. And how many there are who try to escape ... how many prefer to dream (the Lord giveth to His own in sleep!), how many would far rather let things be conjured before them in all kinds of dream-images of the spiritual world than acquire knowledge through activity and effort of the soul. We know well that many people are much happier to have some kind of visionary experience than to grapple with difficult chapters of Spiritual Science in a book that can speak to those forces in the human soul which in ordinary daily life are wrapt in slumber, that kindles to life what is otherwise unconscious in man and so transports him into the living reality of the spiritual world.

To face the waking life of day with dullness and lethargy, to linger in vague obscurities, is not the right way; the right way is to strive with activity of soul to follow and master the development of the thoughts and ideas presented in Spiritual Science. For when we grasp these trains of thoughts and ideas by dint of bold, determined effort, we reach the stage where mere theorising, mere cogitation and intellectual acceptance of what they contain, change into vision – and we are actually within the spiritual world. But a real understanding of modern life makes it evident that through the milieu of applied technical science we pass into an Ahrimanic sphere and allow ourselves to be filled with Ahrimanic spirituality.

The most terrible catastrophe would have befallen earth-evolution if in earlier times provision had not been made in advance for what, in accordance with

world-karma, modern humanity is bound to experience under the sway of this Ahrimanic spirituality. Life proceeds, by necessity, in a perpetual pendulum swing. It swings out to one side or the other, like a pendulum. Nobody can say with truth that he is protecting himself from Ahriman, for there are no means whereby he could do so. And if anyone were to long to retire permanently into a sanctum with suitably coloured walls, as far away as possible from anything like a factory or a railway, and thus withdraw completely from modern life – even so there are many other ways whereby the Ahrimanic spirituality can be led into his soul. He may tear himself away from modern life, but modern spirituality finds access to him nevertheless. [25, Dornach, 28 December 1914, p. 5f]

We may feel really challenged by the demands that Rudolf Steiner made of people today. For, on the one hand he gave open indications on how technology makes the evolution intended for humanity more difficult, and on the other hand he is not tired of emphasising that we cannot escape this cultural evolution, nor should we. This dilemma, which is hard for the ordinary understanding to grasp, is expressed in its most extreme form once again in the lecture of 6 October 1917, where he said:

As you know, not long ago growing numbers of impulses came into human evolution which did not exist before and which are quite characteristic of our present civilization. Try and go back in your mind to times not very long ago. You will find times when there were no steam locomotives, when people did not yet use electricity as we do now; times perhaps when only thinkers like Leonardo da Vinci were able to have the idea, theoretically and on the basis of experiments, that humans could create apparatus which would enable them to fly. All this has come to realization in a relatively short time. Just consider how much depends on the use of steam, of electricity, of the changes in atmospheric density which has made airships possible, or the knowledge of statics which has led to the aeroplane. Consider everything which has come into human evolution in recent times. Think of the destructive powers of dynamite, etc., and you can easily imagine, seeing how swiftly this has gone, that new and different fabulous things of this kind will be the goal of future human endeavour. I think you can easily see that the ideal for the near future will be to have not more and more Goethes, but more and more Edisons. This really is the ideal of modern humanity.

Modern people do, of course, believe that all this — the telegraph, telephones, the use of steam power, etc. – happens without the participation of spiritual entities. This is not the case, however. The development of human civilization involves the participation of elemental spirits, even if people do not know about it. Modern materialists imagine that the telephone and telegraph, and the steam engines driven long distances and also used by farmers, have been constructed merely on the basis of what people produce by the sweat of their brow. Everything people do in this respect is under the influence of elemental spirits. They are always involved and helping us in this. People are not

taking the initiative on their own in this field – they are guided. In laboratories, workshops, really everywhere where the spirit of invention is active, elemental spirits are providing the inspiration.

The elemental spirits who have given impulses to our civilization from the eighteenth century onwards are of the same kind as those used by the gods to bring about birth and death. This is one of the mysteries which human beings have to discover today. And the law of world history of which I have spoken is that as evolution proceeds, the gods always rule for a time within a particular sphere of elemental spirits and then human beings enter into this same sphere and use the elemental spirits. In earlier times, the elemental spirits of birth and death essentially served the divine spirits who guided the world; since our day – and this has been going on for some time now – the elemental spirits of birth and death are serving technology, industry and human commerce. It is important to let this disturbing truth enter into our souls with all its power and intensity.

Something is happening in this fifth post-Atlantean period of civilization which is similar to something that happened in Atlantean times, during the fourth Atlantean period. I have spoken of this before. Up to the fourth Atlantean period the divine spirits who guide human evolution used certain elemental spirits. They had to use them because not only birth and death had to be brought about at that time, but also something else, which may be said to be closer to the earth. You will remember some of the descriptions I have given of the Atlantean age, when human beings were still flexible in their physical nature and their souls could make their bodies grow large or remain dwarf-like, with their outer appearance depending on their inner nature. Please call this to mind again. Today the service certain elemental spirits give to the divine spirits on occasions of birth and death is clearly apparent in physical terms. In those times, when outer appearance was in accord with inner nature, certain elemental spirits were serving the gods for the whole of human life. When the Atlantean age had reached its fourth period, people again began to rule the elemental spirits, which had previously been used by the gods, to govern the growth and general physiognomy of human beings. Human beings gained control of certain divine powers and made use of them.

The consequence was that from about the middle of the Atlantean age it was possible for individuals who desired to harm their fellow human beings to use all kinds of creative powers on them – keeping them dwarf-sized in growth or making them into giants, or letting the physical organism develop in such a way that the individual concerned would be an intelligent person or a cretin. A terrible power was in human hands in the middle of the Atlantean age. You know, for I have drawn attention to this, that this was not kept secret, though not from any kind of evil intent. According to one of the laws of world history, something which initially was the work of the gods had to become the work of human beings. This led to serious mischief in the Atlantean age, so that over the last four or three periods of civilization the whole of Atlantean civ-

ilization had to be guided towards its own destruction. Our own civilization was saved and brought across from Atlantis, as I have described elsewhere, and you will recall my descriptions of what happened in the Atlantean age.

In the last three, or two, periods of post-Atlantean civilization in the fifth stage of earth evolution, work now done by the gods will again become work to be done by humanity. We are only in the early stages of the technological, industrial and commercial activities which proceed under the influence of the elemental spirits of birth and death. This influence and its effects will be increasingly more radical. Until now, the elemental spirits of birth and death have been guided by the gods and their influence has been limited to the coming into being and passing away of humans at the physical level. But the civilization of our own and future ages has to be such that these spirits can be active in technology, industry, commerce, and so on.

There is also another, quite specific, aspect to this. As I have said, these elemental spirits are the enemies of human welfare and want to destroy it. We have to see things straight and not have any illusions concerning the radical nature of this. Civilization must progress in the fields of technology, industry and commerce. But by its very nature such a civilization cannot serve the well-being of humanity in the physical world; it can only prove destructive to the human weal.

This will be an unpalatable truth for people who never tire of making great speeches on the tremendous advances made in modern civilization, for they see things in abstract terms and know nothing of the rise and fall which is part of human evolution. I have made brief reference to the causes of destruction in Atlantis. The commercial, industrial and technological civilization which is now in its beginnings harbours elements which will lead to the decline and fall of the fifth earth period. And we only see things straight and face reality if we admit that we are here beginning to work on something which must lead to catastrophe.

This is what it means to enter into iron necessity. Looking for an easy way out people might say: Alright, I won't take the tram. It might even go so far – though even members of the Anthroposophical Society are unlikely to take things this far – that people will not go on trains, and so on. This would be complete nonsense, of course. It is not a matter of avoiding things but of getting a clear picture, real insight into the iron necessities of human evolution. Civilization cannot continue in an unbroken upward trend; it has to go through a succession of rising and falling waves. [46, Dornach, 6 October 1917, p. 61f]

If we take what Rudolf Steiner says here seriously, we might well feel faced with a challenge apparently beyond our capabilities: on the one hand we are supposed to be aware that all mankind's technical progress, from the very nature of the being who inspires it and works through it, cannot be conducive to human wellbeing, but will bring a great global catastrophe, albeit only in several thousand years. Yet precisely this must happen

because it involves an iron necessity in the world evolution. Therefore it would be wholly unreasonable to want to avoid this technical progress. And what consequence would such an awareness have for the way those people see themselves whose job is precisely that inventive activity about which, according to Rudolf Steiner, we should be clear that it is inspired by exactly those beings inimical to human wellbeing? No technicians or engineers – and that probably even goes for those who participate in the invention of weapons, where it would probably be most of all true – really think that by their activities they are working on something that cannot possibly contribute to the wellbeing of mankind, and ultimately must even lead to a great catastrophe. And were they to think this, how could they carry on with their work? But that the work must be done is, according to Rudolf Steiner, an inescapable necessity.

A further question that arises in this connection is whether people would have an influence on how quickly this technological development progresses, and thus how soon such a catastrophe would happen, which in fact is only predicted for the end of the post-Atlantean stage of world evolution. And what would be the appropriate speed of development and who would decide about it?

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As we are unable provide a question like this with an answer which would not always give the impression of subjectivity tinged with emotion, may be connected with a development that itself has come with technology. This would be the development of a pragmatic approach: we can regard as true only that which is <proven>, in the truest sense of the word, out there in the world in front of us. In this mind set, the increasing complexity of technology has made us no longer able to experience inwardly whether people who construct it have or have not thought about it properly, i. e. truthfully. Instead, for example with an aeroplane, people obviously have first to experience empirically and test it in the outside world before they can say, with approaching one hundred percent probability, that the aeroplane has been properly thought out. Nobody would go up in a plane that has never flown, but about which the manufacturer claims that he has an inner experience of the truth that it will not crash.

Rudolf Steiner spoke in a similar way on 17 June 1920 to students of the Technical University in Stuttgart, by saying: «The fundamental concept of truth in the human soul itself is actually removed.» [9, Stuttgart, 17 June 1920, p. 39] But this is not the end of the matter. Experiencing exactly what is conveyed to us by technology, could, according to Rudolf Steiner, point us once again to the wholly missing spiritual element in it, precisely because there it is missing. This is how he expressed it once again on 30 June 1921 at the closing address of one of the School of Spiritual Science meetings organised by young people in Darmstadt:

And when I am speaking here to those in this movement who are becoming technologists, may I say that to me this being in the midst of technical work is of very special significance for a spiritual movement. Things develop in the world as polarities. Technologists experience what is at the pinnacle of the scientific way of thinking in their constructing; they experience it in building and in the laboratory. By our pouring of the natural laws into the outer world through developing technology, we lead above all things our souls to what at

first does not contain the spirit, but the human heart enters into everything. The human soul and the human spirit make their way into this realm. Precisely through the experiencing of technology must feeling, must thinking be guided to the other pole, to what as spirituality surges and weaves through the world. Technology is especially suited to penetrating deepest into the outer world of the senses in order to point towards the other side, towards the side of spirituality. I therefore believe that it is precisely from prospective technologists that much of that strength can issue which can give rise most effectively to a spiritual disposition, a spiritual world outlook for the evolution of humanity. [49, Darmstadt, 30 June 1921, p. 173f]

Finally, Rudolf Steiner dealt further with the topic of technology and electricity in particular in the last of his leading thoughts *From Nature to Sub-Nature*. There he wrote:

He must find the strength, the inner force of knowledge, in order not to be overcome by Ahriman in this technical civilisation. He must understand Sub-Nature for what it really is. This he can only do if he rises, in spiritual knowledge, at least as far into extra-earthly Super-Nature as he has descended, in technical Sciences, into Sub-Nature.

And:

Electricity [...] must be recognised in its true character – in its peculiar power of leading down from Nature to Sub-Nature. Only man himself must beware lest he slide downward with it.

As well as:

It is just by receiving in Knowledge this spirituality to which the Ahrimanic powers have no access, that man is strengthened to confront Ahriman within the world. [30, Dornach, March 1925, p. 218]

We hope that the working group on the theme of *Technology and Spiritual Science*, newly formed this year at the Goetheanum, will in due course be able to work on the hitherto long unanswered questions mentioned in this article. It is an open group and anyone who is interested is warmly invited to contact the Mathematical-Astronomical Section regarding joining our work.

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Translation received: October 2011

Acknowledgement

We would like to thank Judith Soleil of the Rudolf Steiner Library, New York, for her help with bibliographic details of some of the passages quoted from lectures that are already translated into English.