Algorithmic Control of Movement in Time

Abolishing even our selves ourselves

Michael Eldred[1]

Abstract

Today we live increasingly dependent upon an artificial, engineered world controlled by algorithms that may be called the *cyberworld*. The exposure to and immersion in this cyberworld is a major issue, especially for the nascent generation of children and adolescents. How is it shaping and mis-shaping their minds? This question is addressed only obliquely in the present paper. It seeks to go back to first principles, that is, to the very *idea* of the cyberworld. Algorithms are able to automatically control movement in the artificial cyberworld and hence mediately in the world itself. With his famous 1936 paper on computable numbers and the Entscheidungsproblem in mathematical logic, for which he invented the idea of the Universal Turing Machine, Alan Turing can be said to have tacitly laid down the ontological blueprint for today's algorithmically controlled cyberworld. The ontology of movement of a Turing machine is a variant of the venerable ontology of efficient, productive movement inherited from Aristotle. Since any computation a real computer can perform can be performed in principle also by an ideal Universal Turing Machine, it maintains its place at the core of computer theory to the present day. In fact, the cyberworld, can be conceived as a virtually endless concatenation of Turing machines in interplay with one another, sometimes precariously and nefariously. The question whether Artificial Intelligence is genuinely intelligent can be led back to asking whether a simple, primitive Turing machine is intelligent. I endeavour to show that the intelligent human mind needs to be conceived as embedded in the openness of genuinely three-dimensional time. The same cannot be said of a Turing machine, which is necessarily lacking, in particular, the temporal dimension of the future. Since the artificial neural networks employed by Artificial Intelligence can be simulated by a Turing machine, one can say that, in the strict sense, Artificial Intelligence, too, has no future and is therefore unfree. And so it goes that the more we come to conceive ourselves in terms of neuroscience, the more we are abolishing our selves ourselves.

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Contents

1. Turing's cyberworld

Alan Turing did not live to see it, but he is one of the immediate fore-casters, casting in advance, or *a priori*, prior to any experience of it, today's artificial cyberworld. More distant fore-casters who pro-jected or threw forward this now global technological marvel include Galileo, Leibniz and Descartes, Aristotle, Plato and Pythagoras. The fascination with the possibility that the world could somehow, in its deepest ontological structure, be reduced to number has a distinctly Greek pedigree. Already Plato showed that any λόγος, i.e. anything that can be said, can be broken down into a series of discrete bits: words, syllables and letters. These bits, in turn, can be encoded by a number, so that any λόγος, any statement at all, can be encoded into an unambiguous natural number. The λόγος itself was cast as the unique feature, or differentia specifica, distinguishing human being itself, with Aristotle, following Plato, casting the human being as τὸ ζῷον λόγον ἔχον, that is, as the animal that has the λόγος. Ever since then, we understand ourselves as a species of animal whose differentia specifica is language, rationality, reason. This continues to hold even when, in the modern age, the irrationality of the human being has come under intense scrutiny, both philosophically and in modern psychology. For irrationality is a determinate negation of rationality that is not outside the phenomenality of rationality altogether, but belongs to it. For modern science, the human being remains unquestioningly cast hermeneutically as a species of animal, even though its differentia specifica is today usually called cognition, with the cognitive faculty itself being conceived as some kind of intelligent, brain-based computation. This shift, in turn, opens the door for Artificial Intelligence to come into competition with human intelligence, for they are then conceived to be, in principle, of the same kind.

Today we have managed to actually make an artificial world inhabited entirely by numbers that owe their existence to the laws of electromagnetism, a progeny of mathematical physics associated in particular with the name of James Clark Maxwell. Electrical and electronic engineers have built a global network as an electromagnetic matrix in which binary numbers, i.e. strings of binary digits or bits consisting entirely of ones and zeroes, are embedded, copulate and circulate. Each of these binary numbers encodes a statement expressing an understanding of some partial, perhaps even minute, aspect of the world.

Turing himself was working in the area of mathematical logic, that is, in the area of what can be said mathematically and whether what is said in a mathematical statement can be proven. He came up with the idea of a Turing machine in his famous 1936 paper in connection with the so-called Entscheidungsproblem, first posed in 1928 by the mathematicians, Hilbert and Ackermann, to show that there are formulae in functional calculus whose provability or non-provability cannot be decided by a machine working stepwise through an algorithm. He thus demonstrated that there are limits to the mathematical λόγος by showing that there are numbers encoding a mathematical statement that are not algorithmically computable to decide whether they are provable. This non-computability amounts to the logos chasing its own tail without success and this, in turn, points to a limit of discretization and digitization of the world that I cannot go into here.[2]

2. What is a Turing machine good for?

A Turing Machine is a copulating machine that has one bit-string, the algorithm, copulate with another bit-string, the digital data-input, to generate a further bit-string as output. It may therefore be called simply a (Turing) *copulator*. In general, the algorithm is the ‘male’, active, executable code, whereas the digital input data are the ‘female’, passive bit-string that suffers itself to be computed and changed to generate a resultant, ‘offspring’ bit-string. The cyberworld can be conceived as being driven by countless myriads of Turing copulators, each equipped with its own algorithmic code and ready to compute digital data input into it, thus generating more bit-string output that is either passed on in the digital electromagnetic matrix to another Turing copulator or transmitted as a signal to control some device or other in the world or provide information to a human.

The cyberworld is thus conceivable as a materialized concatenation of virtually innumerable Turing copulators. The technological, engineering problem for the cyberworld is how to build networks that enable the efficient,

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2 Cf. Michael Eldred ‘Digital being, the real continuum, the rational and the irrational’ 2009 and 'Continuum and Time: Weyl after Heidegger' 2014 in Eldred 2015a.

error-free computing copulation of bit-strings with each other and their efficient, error-free transmission through the cybermatrix to their next destination. To solve this problem, electrical and electronic engineering relies on the physical sciences that provide the basic laws of motion of electrons (electricity) in a constructed, controlled electromagnetic medium (electronics) that serves as the matrix for bits to be embedded and transmitted. At first it was entirely left out of consideration how the active algorithmic bit-strings could interfere with one another.

But what are Turing machines copulating algorithmic bit-strings with data bit-strings, thus computing computable numbers, good for? They are good for automatically controlling movements of all kinds. The movement may be, for instance, the algorithmically steered dissemination of information or misinformation throughout the cyberworld to human recipients. It is also common knowledge today that all conceivable kinds of devices, appliances and machines can also be automatically controlled by algorithms, ultimately for the sake of *existential movements*, since the cyberworld is itself embedded not just in the larger physical world, but in a meaningful human one. The binary bit-strings *signify* something for the control of existential movements of human beings. Control here encompasses not only enabling existential movements, but also dictating, surveilling, hindering or preventing them. The data input into an algorithm are encoded information of some kind knowingly preselected for such inputting and with an *end in mind*. The algorithm (the app or program) has been encoded to copulate with certain data on the basis of an understanding of a particular practical situation such as the need for an automobile to adjust its speed or direction of travel or whether an individual arriving at a border is allowed to enter that country by a border official. If the situation for which the algorithmic binary code has been written has been misunderstood in some way, the algorithm itself will misinterpret the situation and misguide or even prevent the intended movement. The same holds true if the algorithm has been miscoded.

Practical situations pertain to intentional, willed human actions which are themselves kinds of movement. The algorithm, of whatever kind, can be regarded as a binarily encoded λόγος representing the understanding of a practical situation that is *outsourced* to a digital device to *automatically* control some kind of movement or change in the human world. This *outsourcing of logical understanding of the world* is universally greeted as a great boon for humankind and gratefully accepted by it. The *gratitude* starts with appreciating the *convenience* of being able to algorithmically control all sorts of existential movement, such as ordering a pizza online or having a video chat with a friend, through to the gratitude felt for life-saving digital devices that automatically correct or inform about malfunctions in bodily organs. In particular, the state is grateful for the surveillance and überveillance[3] opportunities algorithmic control affords to consolidate its exercise of power over its population's movements of whatever kind.

Algorithmic computation itself is a kind of effective movement that can be conceived in terms of inferential changes to bits in bit-strings resulting from copulation. The digitally encoded algorithm itself is a starting-point for this computational movement that is ready to receive and compute binary input data. The cyberworld and its automated effects on the environing physico-human world is thus set up, and works, in a causally deterministic way, to bring about envisioned, precalculated changes, or movements, of all kinds, that is, as long as the interplay among the algorithms themselves does not sabotage the intended aim. This is the sense of the prefix 'cyber-' in 'cyberworld' (from the Greek verb κυβερνᾶν 'to steer', 'to govern'). Thanks to the global reach of the electromagnetic matrix that forms the technological basis of the cyberworld, it is no exaggeration to say that in some sense humanity has (seemingly, if it were not for the interference between the algorithms in interplay) achieved global technoscientific cybernetic rule. The interference among the algorithms in interplay with one another is what is commonly known as the problem of computer viruses when one piece of executable code infiltrates another, thus being deployed for all sorts of nefarious aims, but it also includes more fundamentally the unforeseen and unforeseeable consequences of even the 'innocent' interplay among the algorithms.

3. Greek beginnings

The realized cyberworld is perhaps the ultimate consummation of what was cast first of all in Greek philosophy through its centuries-long engagement with the *question concerning movement in time*. The Aristotelean ontology of movement may be regarded as the culmination of this Greek endeavour to conceive what movement itself *is*. The term movement here comprises not only (loco)motion, that is, change of place, but also qualitative and

3 Cf. M.G. Michael & Katina Michael (2013)

quantitative change as well as reproduction or progeneration. Aristotle conceives all sorts of movement and change as proceeding from an origin, a force or potential that, when put to work, effects a change resulting finally in an end-product. In Greek the origin is called an ἀρχή, the potential is a δύναμις, the potential at work is ἐνέργεια, and the end-product is the τέλος in which the movement comes to its envisaged end and thus 'has its end' or ἐντελέχεια. This paradigmatic *ontology of productive, effective movement* continues to tacitly underlie *all* modern scientific endeavour to come to terms with movement and change in the world, even when the pretension to effective control has to be softened into stochastic, probabilistic prediction. Any science lacking predictive power is not regarded as a science at all, and any technology not reliably generating effective change is not regarded as a technology at all.

The ontology of productive, effective movement is undergirded by a tacit *absolute will to power over all kinds of movement and change in the world* that maintains its silent vice-like grip on the human mind to the present day. This will to power is not the collective will of a collectivity of subjects, but rather a unified, historical, ontological will that has been implanted in and has infected the human mind for centuries, and even millennia, with what may be called the *techno-scientific mind-set*. The absoluteness of this will to effective power has two aspects. Firstly, it is *unbridled, limitless* (ἄπειρον) and, secondly, it is *totalizing* in the sense that it overrides and obliterates any other approach toward the phenomena, inducing thus ontological blindness. This absolute will to effective power has today been algorithmically outsourced to the cyberworld to automatically control movement both within the artificial cyberworld itself and the shared human world.

4. The one-dimensional linearity of time in the cyberworld

The ontology of effective movement relies on the *concatenation of cause and effect along linear time* in order to control movement and change of whatever kind. Linear time itself is an Aristotelean heritage from his *Physics* that remains unquestioned and unchallenged by the *techno-scientific mind-set* in our techno-scientific age. Instead, this mind-set ignores and dismisses Aristotle's thinking on time as superseded — to its own detriment. Effective causal nexus and one-dimensional linear time go hand in glove, as becomes abundantly apparent at the latest when equations of movement are written down invoking and involving the real variable of linear time, t. Linear time is required to render science *predictive*. When a movement or change in the world cannot be unambiguously explained by some known underlying causal mechanism, science reverts to statistical probabilities and correlations that still provide some predictive power along linear time. Where no necessary causal connection can be made via an underlying theory, the substitute is the extrapolation of empirical regularities, which is particularly powerful when a large number of observations is available, rather than in individual cases.

In the cyberworld such large numbers of observations are available in the form of digital data that are summated into what today are called Big Data. Such mountains of digital data can be mined to find regularities and patterns that may be interpolated or extrapolated statistically along the time-line into the future.

5. Artificial Intelligence?

The deployment of algorithms to mine data to discover patterns that can be employed for predictive purposes raises the question concerning the nature of so-called Artificial Intelligence. Is Artificial Intelligence truly intelligent? Mining data using *artificial neural networks* is called *machine learning* or *deep learning*, both of which terms suggest intelligence. The *learning* aspect of such deep-learning algorithms refers to *modifications* in the algorithm itself that adapts itself according to reaching or not reaching predefined thresholds at nodes in the artificial neural network. The weighted sums of data input at each node determine whether the threshold is reached or not and thus whether the artificial neuron 'fires'. The thresholds, too, can be adjusted to achieve a better fit to the known training data before the A.I. algorithm is released 'into the wild'. Such algorithmic learning aims at uncovering patterns in the training data that can be matched with empirical data fed into the algorithm in order to draw conclusions by way of interpolation or extrapolation.

An example of this is weather forecasting. The data mined for this application consist of enormous amounts of detailed data on weather patterns in a particular region that reveal regularities about how the weather has changed over time periods of, say, several days. On the assumption that these regular weather patterns repeat themselves, they can be extrapolated a few days into the future to provide a weather forecast that can be surprisingly accurate due to the huge mountains of past weather-data mined that have been accumulated over decades or even centuries.

Consider another example: If machine-learning algorithms are employed to find deep patterns in the voting behaviour of an electorate, filtered through multiple layers of artificial neural networks that incorporate multiple layers of past data, this may result in the discovery of fine-grained voting patterns, but whether these patterns can be extrapolated into the future for the next election becomes highly improbable. This has to do with the nature of deep-learning Artificial Intelligence algorithms themselves, which rely upon the *future being a repetition of the past* with more or less modifications, i.e. they assume that past, regular data patterns will be repeated grosso modo. The voting behaviour of electorates, however, can change markedly because changed circumstances throw up very different political issues to be dealt with that require humanly intelligent voters to assess which politicians or political parties appear more up to meeting these new challenges looming from the future. The mood of the electorate can also change and shift in inexplicable ways. How are data on moods and mood swings of an electorate to be collected and mined at all by an algorithm? Whereas a human electorate immersed in a certain upbeat or downbeat mood looks into the future to assess, perhaps vacillatingly, the prospects one way or another, can it be said that Artificial Intelligence, which presumably is not in any mood at all, is able to look ahead into an open future *at all*? That is to say, is A.I. able to look ahead not merely predictively toward future events, but into the open temporal dimension of the future itself in which many different kinds of events are held in abeyance as absent, including the unforeseen, unexpected and surprising along with the wished-for, the feared and the imagined? Events held in abeyance as absent in the future may never eventuate in the present. They nevertheless 'exist' in the sense that they presence in the human mind's imagination as futurally absent. Could A.I. ever have an imaginative mind in this sense?

6. The timelessly copulating Turing machine

To approach the question of the intelligence of Artificial Intelligence, it should first be noted that, according to the Church-Turing thesis, the computable functions are the general recursive functions[4] and hence the

4 Cf. Rojas *op. cit.* p. 6 and Penrose *op. cit.* p. 64.

artificial neural networks employed by Artificial Intelligence compute results that, in principle, can also be computed by a Turing machine. This justifies our going back to the elementary ideal unit of the cyberworld, the primitive Turing machine itself, to consider the question whether Artificial Intelligence is itself intelligent. A Turing machine[5] consists of a scanning-head that is positioned at one square on an endless tape and 'reads', that is, detects the binary digit, a 0 or 1, marked on that square by some technical means. Depending upon the computing rule that is effective at that step and whether 0 or 1 is read, the scanning-head, which doubles as printing-head, will print a 0 or 1 and move either one step to the square on the right, one step to the square on the left, or stay on the same square whilst either shifting to another rule or staying with the same rule.

The Turing machine's algorithm is unambiguously defined by its set of rules that must be finite in number. The rules are of the kind If...Then. Given that the machine reads a square with its bit while a given rule is applicable, the rules lay down how the machine must move by printing, shifting its scanning-head and progressing to another rule. Such a machine is completely deterministic, given its algorithm and input data, and is *satisfactory* if it ends finally with the STOP rule, after having generated a non-zero bit output. A Turing machine that does not stop and generate an output is clearly not useful, but a dud. The algorithm itself may be encoded in a binary number that is printed on the tape at the outset, along with the input data that are to be worked through by the algorithm. Such a Turing machine that is capable of receiving any set of algorithmic rules for processing input data is called a Universal Turing Machine. It may also be called a general-purpose Turing Machine.

With respect to the *ontology of productive, effective movement* that I have outlined, the potential or force that is put to work in a Turing machine is the techno-practical know-how encoded in the algorithm's rules plus the technological know-how embodied in the physical machine that is able to detect, print and shift its scanning-head whilst changing its state to the next algorithmic rule. This know-how potential is *actually* put to work as an energy by feeding it with binary input data that it has to process, thus effecting a stepwise change of the Turing machine's state consisting of the

5 For a lucid presentation of the Turing Machine and the Universal Turing Machine in terms of pure bit-strings, cf. Penrose *op. cit.* pp. 46ff.

bit-string printed on the tape as output, the position of the scanning-head on the tape as well as which rule is then applicable. These steps can be thought of as a succession of machine-states at time intervals t_0, $t_0 + 1$, $t_0 + 2$, and so on. The succession is completely deterministic, generating finally an output of binary code, that is, a bit-string, on coming to a halt. It is clearly also an effective, productive movement in linear time. The product is the bit-string 'answer' to the computation effected by the algorithm on the input bit-string.

Is there any sense in which one could say that any such Turing machine is intelligent and open to time like the human mind? One could perhaps say that the machine's scanning-head 'reads' the bit on a given square of the tape at time $t_0 + n$ in the present and that this act is an intelligent one. But the time $t_0 + n$ where the scanning-head is at present is only a moment in time *for us* as observers. The scanning-head *itself* knows nothing at all of time or presence in a present moment of time. Its scanning-head does not read but electronically detects, according to technologically employed physical laws, one of two symbols on a tape, a one or a zero, which may be simply one of two definite physical states that we humans have set up technologically and *interpret as* one or zero. The scanning-head itself is entirely indifferent to when it scans the square simply because it is not in time. This description of the scanning-head's action is *our* interpretation of it, indeed, our *preconceived* interpretation of it. The algorithm's set of rules, suitably encoded, dictates timelessly, albeit sequentially, what the Turing machine must do, and this must be also physically realized electronically by the machine, based on technological know-how. *All the intelligence* is in the algorithmic binary code that *has already been* written by a programmer in order to compute a desired result consisting of a bit-string output that, when physically realized in the machine (a product of human intelligence in the form of technological know-how), is also a physical effect that may trigger further movements, either computational or otherwise.

The kind of physical movement finally effected by the physically realized Turing machine is *foreseen as a spectrum of options or possibilities* from the start by human intelligence that firstly, must think through how to write the appropriate algorithm and secondly, how to realize this algorithm somehow in a physical machine that is able to change its state according to the algorithm's rules. The physical realization of the Turing machine need not at all resemble its simple idea, but nevertheless must be equivalent to it in operation. As such, the computer itself is neither intelligent, nor is it in time, but is a self-less thing effectively, deterministically steered by the algorithm and the binary input data. It is we humans who are in time and can envisage what the algorithm is supposed to achieve and think through the computer's algorithmically steered movement along linear time toward this end, but the existential time to which we humans are exposed is not restricted to the linear time of a succession of present moments. It is the ontology of efficient productive movement that demands this mental restriction, or flattening, of three-dimensional existential time, of which we are capable, albeit that our psyche is capable of more.

As I have said, Artificial Intelligence amounts to pattern recognition within the given data that enables an interpolation or, in particular, extrapolation into the future, but extrapolated patterns or regularities amount to merely *copying the past*. Furthermore, since the machine-learning algorithms of artificial neural networks employed by Artificial Intelligence can be simulated by a Turing machine, and the Turing machine is completely deterministic, without an open future, it can be said that Artificial Intelligence too, in the strict sense, is without a future. Being open to the temporal dimension of the indeterminate future, however, is the hallmark of free movement, that is, of freedom itself. And it is also the hallmark of intelligence. Each of us, as a self, is free by virtue of being the starting-point for a movement toward an envisaged existential end situated temporally in the dimension of the future.

7. Free mental movement in three-dimensional time

The human mind need not be intent on controlling movement in the world either through technological effectivity or via scientific predictability of movement. In general the mind also does not move in a way comparable to how a Turing machine works step by step through its algorithm, that is, unless perhaps it is thinking mathematically and inferentially, trying to follow what the algorithm does. The will to power over movement is wedded to linear time, from whose present moment future events are to be controlled, whereas the human mind may strive to hermeneutically *understand* and *deconceal* occurrences occurring in any of the three temporal dimensions, past, present or future, without any pretension to causally *explaining* them as if they were, are or will be causally effected. Three-dimensional time is existential in its openness, say, to the human psyche's fears and hopes for the future or its regrets, celebration or commemoration of the past or its excitedness or glumness about its present situation. Many phenomena not occurring in any particular temporal dimension also call for *interpretive* understanding independently of any will to master their movement. The endeavour to understand phenomena hermeneutically in depth is even *prior* to any attempt to causally explaining them that usually also makes do with a raw, superficial understanding of the phenomena in question themselves in the rush to control them. The phenomena themselves are skipped over in all their nuance and subtlety, leaving the scientific mind only with a distorted view of them. This distorted deconcealment of the phenomena applies perhaps most fundamentally to the phenomenon of time itself.

The mind also does not necessarily follow movements and change along a time-line such as the physical motion of something in the present or the sequence of past events making up the story-line of an historical event or the sequence of events necessary to realize a plan. For the most part, in everyday life, an individual's mind hops and skips, only apparently in a haphazard way, among occurrences occurring in all three temporal dimensions according to its own loose associations. One occurrence comes to mind followed by another from another temporal dimension, and they usually hang together or make sense in some way. Thus they presence in the mind's present focus whence they also absence from that focus to one of the temporal dimensions as the mind's focus hops and shifts among occurrences occurring in any of the three temporal dimensions. *Presencing* in the mind's present focus and *absencing* from this present mental focus together constitute what I call the movement of *mental essencing*.[6] Such mental essencing essences in the openness of three-dimensional time, and the mind's movement through this openness may be regarded as enabled by, but not caused by, the *power of imagination* within the psyche.

The individual human psyche itself is a *partaking* of three-dimensional time, to which it belongs as long as the individual is alive. This psychic belonging to time is the condition of possibility for all mental movement. In particular, a future scenario may be imagined without any pretence to ever realizing it in the present. Nevertheless, such imagining of the future may be a powerful motivation for present reflection and action. The interpretive imagining may simply be a way of getting close to certain phenomena of interest such as love and hate, thus understanding them as part of the human

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6 Cf.. Eldred *On Human Temporality* (2023).

condition. The same holds true of imagined pasts that prod hermeneutic reflection upon present situations in which similar phenomena such as the lust for power and boundless ambition occur. All that essences in the three temporal dimensions remains hermeneutically fluid and is never finally set in stone as settled, naked, positivist fact. There are also phenomena that come to mind without determinate temporal situating, such as ideas of freedom or justice, or of movement itself upon which the mind can focus in the present. The hermeneutic fluidity of the phenomena themselves goes 'all the way down' to the ontological-existential cast of an historical age.

8. The Turing test turned on its head

A final remark in view of the three-dimensional temporality of the human psyche and mind that I have just sketched: The well-known Turing test from 1950 consists in testing whether a human in an exchange with either a computer or another human can detect any difference. If he or she can't, then the verdict is that the computer has become as intelligent as a human and perhaps may have even surpassed human intelligence. This point of view on human intelligence can be turned on its head, however. I suggest namely, on the contrary, that the true test is the extent to which humankind comes to conceive its own intelligence as nothing other than algorithmic intelligence, for instance, that human intelligence is conceived as neuronal cogitation of the brain that is studied by today's neuroscience. Such a degeneration of human being itself seems to be well underway today. It amounts to abolishing even our selves ourselves.

How so? Because the material brain is not a self. Even with today's subjectivist metaphysics, the self is a phenomenon of consciousness. Already with Descartes it is well appreciated that conscience literally means 'co-knowing', with the consequence that all consciousness is self-consciousness, i.e. that all consciousness has a continual companion accompanying it (cf. Kant) that enables consciousness to bend back on itself in self-reflection. But beyond subjectivist metaphysics: If the self is conceived hermeneutically as that co-knowing instance within the psyche that partakes of the openness of three-dimensional time, within which all mental essencing happens, then this self as purely temporal is altogether pre-spatial and pre-physical, and therefore cannot be located at some 'where' such as in the spatially material brain. One could say that the pre-spatial, purely temporal psyche becomes spatialized and individualized in a material body, and thus that the human body is *enpsyched* and *entimed*, and thus enlivened as an individual human.[7] The thus individualized self is able to and needs to employ the brain within the body to conceive and direct its own existential movements toward the future in line with how the self casts itself to be by identifying itself with existential possibilities offered by its world. By understanding the world that is embedded in three-dimensional time, the self is able to conceive and cast and shape its own selfhood in its interplay with others in the world. The same does not hold true of algorithmic Artificial Intelligence which, as I have endeavoured to show, does not partake of three-dimensional time at all.

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7 Cf.. Eldred *On Human Temporality* (2023). Due to the priority of pre-spatial, three-dimensional temporality, it is preferable to speak of enpsychment and entimement of the human body rather than conversely. Talk of the psyche being embodied is already a cliché of traditional metaphysics.

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