The Body-Cody Problem:
a Bizarre Post-Human Perspective

by

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Abstract

The classical Body-Mind problem refers to the mysterious interaction between the two Cartesian components of human beings: the *res extensa* (the Body) and the *res cogitans* (the Mind). Today a similar problem involves the relationship between Matter and Information (or between Hardware and Software). How do Information and Matter interact? Can a human being Body be totally encoded into pure Information? If not, what is the relationship between the Body and its Code. This is the Body-Code (or Body-Cody) problem investigated in this contrbution.

1. Body and technology

When we consider the problem of the relationship between humans and technology, we often tacitly assume that humans and technology are distinct and separate entities. Moreover, we assume that technology evolves very rapidly, whereas human evolution is very slow or even stillstatic. My premises here are quite different: on the one hand, the distinction between humans and technology is not sharp, since technology has always had a big role in shaping the intimate nature of humans, and, on the other hand, technology's evolution has gradually

taken the place of human's evolution and has become a sort of continuation of it.

These two evolutions have become closely intertwined and have formed a "bio-cultural" or "bio-technological" evolution that has set the stage for the appearance of a new species, *homo technologicus*, a symbiotic creature in which biology and technology intimately interact.

The bio-technological evolution is ruled by a mixture of Darwinian and Lamarckian mechanisms and forms a composite tangle, that becomes even more complicated as the human-machine symbionts connect to each other to form a sort of global (cognitive) organism heralded by the Internet. As the Internet develops a sort of connective intelligence of its own, some scientists maintain that we are approaching a post-human era in which intelligent machines will usurp the role of humans as stewards of the planet ... and that with the cooperation of humans themselves!

Homo technologicus is not simply "*homo sapiens* plus technology," but rather "*homo sapiens* transformed by technology;" it is a new evolutionary unit, undergoing a new kind of evolution in a new environment. The novel symbiont is immersed in the natural world, hence obeys its laws, but he also lives in an artificial environment, characterized by information, symbols, communication, and virtuality.

In the technology cage that we are building around ourselves like a tight suit, some of our skills will be as useless as prehistorical relics, but will nevertheless continue to demand to be put to use or will ache like phantom limbs. Other skills will obviously be enhanced: technology will operate a sort of selective *filtering* on our person (the complex unit of mind and body).

These considerations concern in particular our bodies. The body is spotlighted by the informational revolution: electronics, robotics, and spintronics invade and transform the body and, as a consequence of this, the body becomes an *object* and loses its remaining personal characteristics, those characteristics that might make us consider it as the sacred guardian of our identity. The body varied in popularity throughout the ages, but overall it has been viewed rather negatively. Many Greek philosophers disparaged and despised it, considering mind and soul much nobler than the body; the Christianity mistrusted the body because of its strong leaning towards sin; Descartes and all his followers considered it as a mere support of the nobler mind. Today, finally, the body is on display on the stalls of the global market, where its

parts are bargained for and sold. And all these transformations occur under the strong thrust and impetus of the economy.

The current status of the body is rather confused and contradictory: On the one hand, it is now recognized that the body is the robust container of intelligence and of implicit and primary knowledge, as opposed to the fragile and abstract mind postulated by symbolic artificial intelligence; but on the other hand, the body is still considered inferior and bodily reproduction is considered, as always and everywhere, free and obvious. Doctors and biologists, engineers and technicians, use the body to perform transgressive and amoral experiments that for some will take us towards a wonderful demigodlike future and for others are simply a profanation and debasement of what is most intimate and individual to each of us. Preserving the body, defending its integrity, and seeking its well-being within a finite and harmonious temporal horizon, are countered today by eugenetic attempts to defeat diseases and even death through a systematic recourse to technology.

At the same time, the body is the object of a morbid and almost pathological interest centered on an obsession with exercise, massages, plastic surgery, piercing, warping, twisting, crippling, maiming. The maniac, often even abnormal, attention to the body, from make-up to depilation to cosmetic surgery, is a conspicuous aspect of the artificial and has spawned a vast business. All this goes with an irreparable devaluation of the "natural," or rather with a progressive *confusion* between the natural and the technological, so that the body is integrated with, and replaced by, mechanical parts. Machines are felt to be the real trustees of incorruptibility, of imperturbability, and, perhaps, tomorrow, of immortality, and we eagerly want to become machines or machine-like. The body becomes the object of artistic experiments, becomes a spectacle and theatre. Its anatomy, functions, and organs are disaggregated and observed analytically with a view to curing, correcting, and modifying them, enhancing, or suppressing them, to free the body utterly from the legacy of bio-evolution.

To summarize: *homo technologicus* is a hybrid creature, a symbiont in perpetual evolution in which new abilities can emerge, both cognitive and active, and the limits of such evolution cannot be indicated. Man makes technology and, in turn, technology makes man. Many abilities of the man-computer symbiont, for example, were utterly unpredictable and we can aptly say that the cognitive

unit "man-with-computer" is essentially different from the cognitive unit "man-without-computer".

Moreover each of us, surrounded and invaded by technology is becoming a hybrid cell of a sort of macro-organism that extends over the planet, whose rudimentary nervous system is the Internet. We are becoming the elements - neurons, organs, cells - of a *planetary creature* that might exhibit a collective intelligence and perhaps a collective consciousness. In this process, artifacts and biological organisms mingle more and more finely, so that we witness a sort of "evolutionary convergence" that challanges the traditional clear distinction between the living world and the non-living world.

2. The Disembodied Post-Human

The biotechnological hybridation and the oncoming of the planetary creature can be interpreted as a new evolutionary stage of mankind. Of course this is a scenario but it is a very plausible one. To indicate the new creatures that will inhabit the world the term *post-human* has been coined. There are several forms that the post-human beings could assume, some of which are exotic and disquieting. All of them pose conceptual, practical and ethical problems. By the way, also the artificial fertilization techniques fall within the post-human domain, since they do not aim at the "reproduction" as much as at the "production" of humans according to more or less precise specifications.

In spite of the seeming oddness of the concept, the post-human requires an accurate investigation to assess its modes, possibilities and limits. I want now to speculate on the possibility that the post-human become disembodied and appears as a fully informational entity. In such an *encoded post-human being*, information is completely freed from its material support (the body) and this is suggested by the enormous importance that information has in today society.

In this version of the post-human, the body is superfluous, actually has disappeared. Or better: it is negligible, it has been replaced by an arbitrary support that serves only to contain the flurry of bits describing its structure. In this post-human version what matters is

not the... matter, the hardware, but rather the software. The hypothesis is that the information contained in my body can be taken out and introduced smoothly into another body, into a machine, into a robot. If the identity of a Self consists of a given neuronal configuration, in a family of waveforms, then the body (be it biological or biotechnological) is a contingent and negligible location of that Self, and the Self can be trasferred into any other support. The body ceases to be what it has always been, the ultimate distinctive sign of the individual identity.

The encoded post-human liberates us from that cumbersome nuisance that is the body, which has always been the rationalistic dream of our civilisation. Certainly the scenario is bizarre, but by no means arbitrary, as I shall try to argue.

3. Information and Support

An important piece of the conceptual framework that allows the transition from the human to the informational post-human (from the biological body to the encoded body) was put in place by Claude Shannon in 1948, when he founded the *mathematical theory of information.*

I wish to emphasize that there is a strong connection between information and its material support: information cannot be reduced to its support, but it needs it. At least in a first approximation, information can be drawn out from one support and introduced into another without any loss or distortion. In this sense information seems to be invariant with respect to the coding operation.

However, this invariance, which is assumed in the mathematical theory of information, holds true only in a particular and very simple case, although of paramount importance, i. e. the *digital* case, in particular the *binary* case, where it is important to distinguish one signal or message from any other, irrespective of the particular form of the signals. The difference between "0" and "1" can be encoded without any loss into the difference between "black" and "white": the fact that the form of "0" is different from the form of "black" does not play any role.

In general, however, information is not invariant to the encoding process and the transfer from one support to another can cause an information loss or distortion. A concert for violin cannot be played with a trumpet without serious distortions.

4. Informational Reductionism

The partial failure of functionalistic Artificial Intelligence has brought about two different reactions, both concerning the body: on one hand some people have argued that to imitate the human intelligence the artificial brain has to be furnished with an artificial body able to interact with the environment. This is the path leading to robotics. Other people have not accepted the failure and have adopted a radical solution: they aim at encoding non only the mind but also the body. This path leads to the encoded post-human: a perfect informational reductionism.

If it were possible to consider information as existing in itself and by itself, if it were possible to reduce music to its code, or the machine to its blueprint, or - to consider an even more extreme exemple - if a human being could be reduced to its genome sequence, then why should we play music, why should we construct the machines concretely, why should children be actually born? The material realization would be a pleonastic redundancy that would add nothing, actually its imperfection would impair the perfection of the abstract model. It would be a sad decay.

This is reminiscent of Plato's philosophy, that privileged ideas rather than their material realization. But we know undoubtedly, beyond any argument and proof, that life is not reducible to pure code. We experience through our existence that the body in which the code is embodied plays a central role in the vast and complicated phenomenon that is life.

History has shown that the efforts of Artificial Intelligence to encode the activities of the mind and to trasfer them into another support entail essential simplifications and distortions. And this in spite of the fact that at a certain level most mental activities are formal, i. e. belong to the world of information. If we consider the body, that belongs also to the world of matter, when we try to take its

information out to trasfer it to a different support, even more serious simplifications and distortions are to be expected. This implies that many properties and capabilities of the body are lost. These could include walking, swimming, eating, making love etc. Are these capabilities and activities to be considered essential or not to the body? If the new information support (the new would-be body) is to be considered a suitable substitute of the original body should it possess these capabilities, should it carry out these activities?

Some would consider the encoded body as a simulacrum, a sham that would not contain the whole essence of the original. We would not be able to dissolve the body completely into a flurry of bits soaring in the sky or in the cyberspace waiting for a new destination. We could not transfer the resistance and solidity and richness of matter into the code, hence the re-incarnation would be incomplete. The body would continue to represent the absolute horizon of our existence, the ultimate obstacle to the total immersion into virtuality. The real body could not be reduced to an ethereal, weightless ghost, either angelical or devilish, that we could store, transmit and process like e signal. Moreover, the encoding process would cancel the most important characteristic of the body, i. e. its being immersed in a *context* and in a *history* in which matter, experience, substance, food, time, joy and pain are fundamental. In one word: as information is not reducible to matter, matter is likewise not reducible to information.

Assume, however, that we accept this particular post-human perspective, that would produce a purely informational being without any support. How could this being interact with the world? The matter-information interaction requires a material support on which information can lie and settle: hence a purely informational being is a mystic abstraction. Even our most abstract ideas can cause us to carry out very concrete actions, but this is because those ideas are embodied in the configuration of our neurons and are then conveyed through the energetic and material structures of our body. Otherwise, if information were disembodied, we would be faced with the old problem of the body-mind interaction that Descartes tackled unsuccessfully. In other words: how could a purely informational being be perceived? And by whom? And if it were not perceived, how could we ascertain its existence? Only by faith. Our encoded post-

human creature could be the only observer of himself, could be obliged to talk only to himself: he would be a sort of informational self-referred Leibnizian monad.

Another problem would arise, concerning the identity and the Self: they would no more be linked to the body, to its context and history, they would be linked to the transferable information, and the question would arise "who am I?" It is not a far-fetched question, a question concernig a far-away future: suffice it to think of the partial decoding of a human being represented by the genome mapping. If a human being, or his code, can be compressed and be recorded completely in a book or in a disc, what happens to his consciousness, intelligence, sensitivity, perception? What becomes the Self in the frame of this informational reductionism? In a word: what is the relationship between Body and Code? That is the Body-Code, or Body-Cody, problem.

5. Genome Mapping: Scenario and Problems

Genome mapping makes subject and object merge. Actually, if the mapping were complete, the subject would disappear utterly into the object. The subject would then be like a person who see himself fall into a precipice in full consciousness and cannot do anything to prevent this fateful event. E. g. the subject could know in advance that he is going to incur a serious illness and yet be unable to avoid it. On the other hand it would not be necessary to avoid the illness, since the body would not be there to accommodate it!

Sure, if I knew my genome I could improve my capabilities and performances, but this poses another problem: if the objectivation of the Self is complete, who is the "Self" that manipulates "his own" genetic code to improve it? Isn't the manipulation already a part of the total objectivation of the subject?

It looks like the presence of the body allows that distance, albeit small, between subject and object that we experience beyond any doubt. It is that distance that makes us possess many assets, as expressed by "my body", "my pain", "my mind" and even "my genome". If everything were objectivized we would face the ancient

paradox of the system that knows everything about itself: this knowledge should be stored in a particular sub-system of the system, and the big system should know everything about this subsystem as well, which implies the existence of another sub-system, and so on and so on, *ad infinitum.*

Let us assume, however, that the encoded post-human path can be trodden. Now, if the Self can be encoded and transferred from one support to another one, if a human being can be identified with his code or software without any necessary link with the original support or hardware, the Self can no more be attached to a particular body. The ancient link between me and my body can be cut and I can take on freely one or several bodies in which my particular code can be reproduced exactly. Problem: if the information that constitutes my Self is transferred to a different support, where am "I"? I am not identical with my original support, nor am I identical with the final support, because they both are occasional. But I am not identical with the code, either, because that code can be reproduced in an arbitrary number of copies with an arbitrary precision, each copy with its support. So: either the abstract code (without support) exists, and I am a monad isolated from everything and everyone else, or a code is always laid in a material support, and in this case all these encoded supports are equivalent. There is no "original", each copy is an original and conversely.

In this case, where is my Self? In which of the many copies is my consciuosness? Is my Self in each copy? If all those copies are allowed to evolve, their evolutions will be somewhat different: does this mean that my Self is splittig and blurring and smearing? Am I becoming a fuzzy Self?

To avoid the regressus ad infinitum I could choose to delegate the observation of my Body-Cody to a third party. A complete decoding of my body would allow a one-one mapping between my neural activity and my subjective experience, in fact would allow to neglect the latter completely. The experimenter would send an impulse to my brain and would know in advance what I experience without even asking me. Also, he would know in advance what decisions I am going to make and my free will would be out on bail, as it were. My consciousness would always be a little late and would define "free

choice" what is really a previous "objective" state. But could we still speak of "consciousness" under these circumstances?

And what about my personal history and my previous experiences? If they are represented in may neuronal patterns, they would be included in the encoding and would be part of the Body-Cody. But how could we describe the action of recalling a memory? Would it be necessary a dynamical and hierarchical encoding? Here, in face of these questions, I feel lost: and such questions arise from a simple conjecture, from a thought experiment that maybe has nothing to do with any sort of reality. And still we feel that there is something to this that deserves an accurate investigation. And the investigation is still in its earliest stage.

I wish to conclude this bizarre talk with a bizarre remark. Assuming that the genome mapping can be carried out utterly, this would bring about a deep change in our philosophy and in our lives. Among the consequences: the end of sexual reproduction, that would be replaced by the informational cloning; the end of many philosophical, psychological and ethical debates, e.g. about free will, consciousness, etc. and many philosophers and psychologists would loose their jobs. And the possible end of the body: once we (who?) find the perfect genome, why should we embody it into a corruptible body? In fact, why should the GGG (Great General Genome) incarnate itself? Such incarnation would determine a progressive decay of the particular body, and the GGG should look for another body... It would be better for Him to stay out of any body and live unchanged in the world of pure information to the end of time.

Are we really heading for the informational post-human represented by the Encoded Body? And do we like it?

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