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Scientific-Technical and Normative Foundations of the New Man

Abstract:

The collapse of the Soviet-style regimes in Europe led some to claim the "end of the utopian age", a topic that dominated public opinion at the beginning of the 1990s. Since the beginning of the twenty-first century, the public has been confronted by a new challenge, one that is associated with the rise of the nano-, bio-, computer, and neurosciences and of brain research and the technologies that these have brought about. At issue is no longer the competition between two systems, namely between the allegedly "utopian" communist planned economies and the constitutional type of society embodied by Western democracies with their neoliberal claim to global applicability. At issue is the vision of a new man that is supposed to result from the interaction of these new primary sciences. The aim of this article is not just to reveal the roots of the term "new man" in the utopian tradition. It also discusses the differences in the most recent variant of meaning as well as the anthropological and ethical problems which follow from the vision of a technically enhanced new man.

The collapse of Soviet-style regimes in Europe led some to claim the "end of the utopian age", a topic that dominated public opinion at the beginning of the 1990s [1]. Since the beginning of the twenty-first century, the public has been confronted by a new challenge, one that is associated with the rise of the nano-, bio-, computer, and neurosciences and of brain research and the technologies that these have brought about (see [2]). At issue is no longer the competition between two systems, namely between the allegedly "utopian" communist planned economies and the constitutional type of society embodied by Western democracies with their neoliberal claim to global applicability. At issue is the vision of a new man that is supposed to result from the interaction of these new primary sciences. The goal of fundamentally increasing man's general potential to achieve can only be reached if man were now to apply Bacon's concept of the domination of nature[1] to himself. Nano- and biotechnology pursue the transformation of man by manipulating atoms and genes. They cooperate with computer science and neuroscience, which provide alphanumeric and self-learning programmes and make it possible for man to influence human consciousness by accessing brain cells.

The term "new man" is itself of course older than this most recent form of its usage. From its first use, it has been at the centre of discourse about utopia, namely since European antiquity. The new man of Renaissance utopia was fed from sources from the Middle Ages and antiquity. Among its Christian roots are, in particular, in addition to the sermon on the mount, in which Jesus saw love of one's enemy as its epitome (Matthew 5:38-48), Paul's vision of the new man as an image of the divine creator (Colossians 3:1-14), and Alan of Lille's view of the new man as a corrective to divine creation [4]. On the other hand, Renaissance utopia followed Plato's opinion that the new man in the form of philosopher and guardian could only be the product of the ideal state [5]. Yet even Campanella transferred this vision of the elites to members of society in general and emphasized furthermore, just as Sir Thomas More had done before him, the ambivalence of human nature, which can deviate from the anticipated desirable condition even under conditions of an ideal state [6]. By viewing the new man to be the product of philosopher kings in connection with the allegedly altruistic socialization by the communist distribution of property, the early enlightenment remained true to Plato and set in the archistic tradition, i.e., the tradition of a dominant state [7]. Yet the noble savage began its pioneering role as the utopian model of the new man as early as the beginning of the eighteenth century. He reached – completely unplatonically – his epitome precisely through the negation of state rule [8]. At the same time, this optimisation

[1] "The end of our foundation is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible." ([3] pp. 364f).

was no longer considered a static condition but a process of perfectibility. In the age of industrialization and confronted by the growth in productive forces of machinery, utopian thought wanted to achieve social harmony by largely subsuming the new man under the rule of homogeneity dictated by the collective, as shown in the examples of "A Modern Utopia" [9] and "Men Like Gods" by H.G. Wells and "Red Star" and "Engineer Menni" by A. Bogdanov [10], regardless of whether this was achieved with the help of eugenic measures (Wells) or blood transfusions (Bogdanov). Stronger individualistic traits in the structure of the new man can, however, be recognized, such as in Fourier and Cabet. For Fourier, the absolute primacy of the pleasure principle was the maxim describing an individual's development [11], and Cabet accepted a surprising range of gratifications of individual needs [12]. Finally, at the end of the century and in reaction to the new men in Bellamy's novel about the socialist state [13], William Morris emphasized once again the anarchist line of utopian thought. According to him, the individual can only develop his creative potential when free of state and institutional coercion [14].

The great dialectical turn in the utopian conception of the new man took place after World War I in the three classic dystopias, Zamyatin's "We" [15], Huxley's "Brave New World" [16], and Orwell's "Nineteen Eighty-Four" [17]: They described the nadir of the new man in the tradition of utopian thought. Utopian altruism became the converse of what was originally intended: the broadly educated, highly intelligent and physically well-formed being was replaced by a number deprived of its humanity by brain surgery (Zamyatin), the depraved apparatchik as the mere tool of a totalitarian party (Orwell), and the prenatally manipulated conformist (Huxley). This transformation, which can be interpreted as self-criticism of the previously dominant archistic line of utopian thought, and not only as a reaction to fascism and Stalinism, has set the framework for discourse on postmaterial utopia since the 1970s [18]. The new man now created increasingly approximates real man, with his longing for freedom, his spontaneity, and his individual claim to realise his own potential. Although utopian altruism continues to form the cornerstone of utopian discourse, the new man is increasingly self-reflective because he is aware that he is capable of misusing power and being possessed by egoism, a thirst for glory, and hate. This tendency to a continuous approximation of real man in his biological and genetic condition - a condition that is designed to ensure individual self-preservation - is the last paradigm change in this central *topos* of the tradition of utopian thought [19].

Yet it is quite evident that in the focus of convergence, or the mutually stimulating interplay of nano-, bio-, neuro- and computer technology which advances scientific-

technological progress, this *topos* has been taken out of its original context within classical utopian discourse after Plato and More and given a new and lasting interpretation. The new man of converging technologies derives his specific profile from the following differences to his original utopian context [20]:

1. In utopian discourse, new man only develops in the context of equally "new" institutions, which requires a fundamental, collectivistic change in property and economic constructs, educational institutions, and political and legal systems. This social and institutional difference to the society of origin is dispensed with in the converging technology concept of new man. He manifests himself without burning any of the bridges connecting him to the property relations and institutional organisations in his capitalist society of provenance.
2. The technical means to create new man are in the hands of private companies in converging technology futurism, whereas in utopian discourse it is the state committed to the common good that bears this responsibility. Thus in the latter case, the shaping of new man is not the private privilege of a few, but is elevated to the level of a public good, even if this is achieved with authoritarian and often inhuman means.
3. The utopian new man is guided by the ideal of a figure cultured in all respects, who should be optimised not just physically but also spiritually and morally in terms of wholesale altruism without changing his biological status quo. In contrast to this, converging technology discourse sees man centred on his own subjectivity and well-being, and as such above all a product of his biological evolution, although, admittedly, artificial intervention in his genome should put an end to its primordial condition,[2] while his second nature, i.e. his culturally and socially transmitted characteristics, is marginalised.[3]

[2] "That which until now was a 'given' in the sense of organic nature and at most could be 'bred', is now becoming an object of intentional interventions. To the degree that the human organism is included in this sphere of intervention, Helmuth Plessner's phenomenological distinction between 'body-be' and 'body-have' takes on a surprising currency. The border is being blurred between the nature that we 'are' and the organic features that we 'give' ourselves. This creates, for producing subjects, a new type of self-relation that reaches deep into man's organic substrate. How these subjects want to use the new room for making decisions now depends precisely on their self-understanding - *autonomously* according to the prescript of normative considerations that are one aspect of the democratic determination of opinion, or *arbitrarily* according to subjective desires that are satisfied via the market." ([21], pp. 27f.)

[3] "Reflections on the relationship between naturalness and artificialization in such manipulations cannot evade the question of man's nature. Two false paths have to be avoided: that of the older 'philosophical anthropology,' that defines man solely in intellectual terms, and that of the sociobiological form of gene theory, which traces the factors forming intellectual and cultural life back to drive of the genes to procreate, of which man is unaware. There can be no doubt that man has a 'first nature,' which he owes to evolution. Yet he leads his real life in the world of civilization that has become his 'second nature.' According to Adorno, 'The naturalness contained at all levels cannot be cut out of its social form without committing violence to the phenomena.' For the advoctes of a futuristic life science, the distinction between 'first' and 'second nature' does not play a role. Their goal is the modification of 'first nature' with the most advanced methods of genetic, computer, and robot technology. The consequences of this for the social and cutural world is seldom an object of serious reflection. At the most, we hear of the anticipated ameliorative effects for one's health and intelligence." ([22], pp. 48f.).

4. For utopians, science and technology serve the socially transmitted needs of man, which at their core result from his unchanging, naturally occurring deficits. With all his natural defects, he pushes technology forward to improve his own quality of life, for instance by rationalizing away inhumane work. As such, scientific-technological development takes place in history for utopians too; but it is only one historical factor – if an important one – among many others. In contrast, for converging technology futurists, history can only occur in the framework of technical development. New man is not in command of this, but makes himself unconditionally dependent upon it, regardless of whether he appears as a cyborg, transhuman, or a settler in outer space. [4]

Given this line of separation to the utopian image of man, the converging technology constructors of new man claim it is possible to raise the structure, function and abilities of the human body and brain to a fundamentally higher plane that qualitatively surmounts previous evolution. Their agenda goes beyond the healing of physical debilities and diseases. The converging technologies want, rather, to permit a perfected body which far exceeds the most powerful performance of today's athletes. Endowed with artificial intelligence (AI), he can absorb more information than before and communicate directly with computers. According to the report of the large national conference in the USA entitled *Converging Technologies for Improving Human Performance* in 2002 (see [2]), the latter will, grounded at the nano-level, significantly increase human performance not only at work, on the sports field or in the classroom but also on the battlefield. In addition, according to the prognosis of converging technologies, human life expectancy can be dramatically increased. In 1800, life expectancy was a mere 37 years. As a result of reprogrammed biology, the so-called transhumanists predict a future world in which human life will enjoy more than 100 years in best health. Uploadable intelligence and downloadable memory storage – thus the prognosis – might make it necessary for us to reach a new, revised definition of our species *Homo sapiens* since "mankind" in its present form represents a relatively early phase of its evolution.[5] At present these techniques in nano-medicine are employed to treat patients suffering from disease, but in the near future – thus the expectation – it will be harder to define what constitutes a disease and what is a condition below the level of optimal health [24].

[4] Recently Alfred Nordmann has emphatically referred to this important difference between technical improvements *for* man's mind and body in history and those *of* man's mind and body within a technical development that consumes history. (see [23])

[5] Alfred Nordmann rejects the idea that the optimizers of convergence technology are at all capable of even reaching their goal of creating a new man. Focussing on the primarily male community of white engineers and their system of values, they project their own concepts of physical and mental ability to achieve onto the construct new man (see [23]). Nordmann's view can be interpreted as suggesting that what is proclaimed to be the further development of man's biological evolution proves to be a return to characteristics of man that were brought forth by capitalist market economy.

Yet the question is whether these visions have a real basis in the research process. Are they merely baseless speculations which – as the example of the South Korean genetics expert Hwang Woo Suk shows – do not exclude fraudulent promises of cures (for a critical discussion of this, see [25])? Or are we confronted by anticipations whose substance in reality forces us to take them seriously?

II.

A critical glance at the state of the efforts of converging technologies to create the optimised new man necessarily brings sobering insights. If Ray Kurzweil, for example, expounds the thesis that it will be possible in the foreseeable future to create a human brain simulation thanks to exponentially increased computer power, then he must accept the criticism that he has fallen prey to a "huge misunderstanding" [26]. The simple increase in processing speed by no means leads to a qualitative change. Although our brain and a computer both carry out logical operations, a computer employs different algorithms than do biological systems [26]. It is difficult to conceive of the binary logic of a computer ever succeeding in interpreting a poem. Gene research has furthermore demonstrated that certain properties of man cannot be traced back to a single gene but to a combination of many genes. Nobody has yet succeeded in decoding such a synthesis. Identical twins, as we know, can differ greatly in human qualities and interests, despite their identical genetic structure, because such differences can also stem from socio-cultural influences that escape genetic control [27]. At our current level of knowledge, a totally new man is not possible. Only isolated changes linked to a very small number of genes really seem viable, such as the cure of hereditary diseases, the creation of access to new sources of food by genetically manipulating plants, and the production of certain enzymes (i.e. chemical substances).

With a view to the real and clearly limited state of research in converging technologies, Alfred Nordmann has presented the most stringent criticism yet of the vision of a transhuman new man (see [23]). He warns against overrating the future visions of the converging technologies, which draw their plausibility from an erroneous if-then scenario, the suggestive power of which is based on a trick. Although the if-then statement of the protagonists of converging theory begins with the assertion of a *possible* technical future ("if"), in the second half of the statement ("then") the subjunctive is secretly replaced by the indicative mood. The consequences of this manipulation are obvious. The merely imagined future overpowers the present so that we are left with the predominant suggestion that developments in converging

technology will roll over us with the inexorability of a natural force. This criticism is as accurate as the consequence Nordmann draws from it: Instead of morally evaluating a very distant and improbable future on a speculative basis, and thus wasting valuable ethical resources, it is more appropriate to ask the new technologies, taking normative factors into account, what they can contribute to solving *today's* problems in our society of origin.

Nevertheless, the problem of the technical feasibility of the new man on the basis of converging technologies must not be underestimated. The primary aim of its protagonists is *politically* to employ their own definitions to define central concepts of postindustrial society. This fact cannot be ignored by those who rightly proceed from the real needs of future society. If they do not want to be bowled over by this converging technology offensive, they would be well-advised to confront them on their own territory. We should furthermore ask ourselves how the faulty if-then logic, with its underhand transformation of the subjunctive into an indicative, could come to be so widely accepted, particularly in Anglo-American public opinion. Does it not draw its force from the very dynamic of scientific-technical progress? And does this not introduce a certain degree of reality into these transhumanist scenarios? In the history of modern science, technical problems have never posed an absolute barrier to its continued development. Who would have believed in the first half of the seventeenth century that the technical achievements in Bacon's *New Atlantis* could ever become reality? They range from fertilizer and propellants, the technology to transform salt water into freshwater, to synthetically manufacture all kinds of medications using grafts and inoculations from trees in woods and orchards, and even to construct machines and engines, diving equipment and submarines, and machines with uniform and fine features ([3] pp. 364-379): These are technical achievements that are now part of the everyday life of our world civilization.

The visions of new man held by converging technologies, in particular in their manifestations as life science, are by themselves, however, significant for yet another reason as a legitimation strategy of so-called post-enlightenment society. How can we understand this? The nineteenth and early twentieth centuries were dominated by the taming of capitalist exploitation by means of interventions and guarantees by the social state. The state which regulated the issues of unemployment insurance and public education supplemented individual human rights by codifying basic social rights. These structural elements corresponded to the hegemony of the social imagination, whose ideal type was expressed purely in utopian thinking. In its orbit there arose a whole network of social institutions such as in Red Vienna of the 1920s, which accompanied people's lives from the cradle to the grave.

To be able to handle its host of social functions, the nation state produced anonymous bureaucratic structures which were also supposed to regulate the relationship between capital and work in a tendentially class-split society. This era of "social imagination" sees itself covered by a social formation characterised by massive individualisation, which is how the new man of converging technology futurism can be interpreted today. The system of state services is gradually giving way to the option of individuals having to increasingly provide for their own well-being. This corresponds to a subject-centred change in mentality that lives on the impulses from the individual's maximisation of benefit, as is shown by the rise of rational choice theories in the social sciences. And finally a trend can be observed towards delegating this benefit maximisation to an individual's living conditions in the widest sense [28].

It is thus no longer a question - as it was in the age of enlightenment – of the optimisation of reason in a narrower sense, accompanied by sociopolitical activity committed to autonomy. What is now in demand is an improvement in living conditions in the widest sense, including genetic manipulation, drugs to enhance emotions and the feeling of self as well as biotechnological means to prolong life. The futuristic imaginings fed by these "new" needs all come down to a new species of man, regardless of whether he is termed *cyborg*, *posthuman* or *transhuman*. "These creations are the offspring of mankind, improved by biotechnology in combination with information science and brain research" [28]. As already suggested, one can dismiss these anticipations as mere speculation. Yet whoever accepts the proposed reasons not to dismiss them is forced to evaluate them. We have thus reached the plane of values in the light of which we will discuss our topic below.

III.

At the heart of the matter, three arguments are produced against the new man optimised by converging technologies:

1. Attempts on the part of converging technologies to create the new man would destroy the autonomy of the individual; the latter would lose its status of self-determining subject, which would be robbed of all integrity. Degraded to the level of an object, with the help of computer technology and biochemical and genetic test procedures, it would mutate to a transparent citizen. "With the feasibility of genetic preselection and a life plan to match the genetic programme, the individual subjects himself to an instrumentalisation, either by others or by himself, which is ignorant of togetherness

and history. The right to one's own body is shown to be a false freedom, and making oneself an object proves to be one step of a preliminary accommodation to the levelling and normalising processes in the organisational fabric of modern industrial society" [29].

2. The attempt by converging technology to reconstruct man in an optimised form violates his dignity, which necessarily follows from natural law. The simplest definition of the term "dignity" from the perspective of modern natural law was provided by Kant. Dignity here raises man to an end in itself and is only upheld if man is not degraded to a means. This, however, is precisely the case if experiments are conducted not *on* humans but *with* them. "For every person born, there is no doubt that he possesses human dignity simply by being a member of the species "human", regardless of his mental or physical abilities, social characteristics or ability to conduct a meaningful life" [30, 31]. Human dignity is thus a given, not an assumption. For this reason, it cannot be reinterpreted to suit the context and adjusted to fit the spirit of the age in the interest of life sciences. Anyone who relinquishes this axiom has a high price to pay. Without a concept of human dignity of this kind, it is a difficult, if not insurmountable task to find a universal guideline for human integrity in a globalised world. Relativising or surrendering it would call into question significant achievements of western civilisation such as the validity of human rights or the prohibition of torture.
3. In the attempts to achieve "lifelong disease prevention" to prolong life, the central values of autonomy and equality of each individual are said to be at stake. This constitutes a gradual slide into a breeding model, from which only the affluent can benefit under the conditions of a liberal eugenics, since the manipulation of genetic technology lies not in the hands of the state but is operated by private firms along commercial lines. Under genetic conditioning, the autonomy of future generations to decide their own fate in a self-determined manner is placed at our disposal. The irreversible conditions thus created would make it impossible to exchange the roles of genetic manipulator and his product.[6] On the other hand, the outline of a two-class

[6] See here [25], pp. 124-126. Kissler summarizes the pertinent discussion between Habermas und Dworkin. Nobody has pointed out the danger of the loss of the individual's autonomy in connection with the manipulation of our genome with more incisiveness than Jürgen Habermas. Over and over again, he has emphasized that a technical transformation of our nature will provoke a changed self-understanding of human ethics "that cannot be made consistent with the normative self-understanding of individuals who determine their own actions and act responsibly" ([21] p. 76). The strengthening of the human genome by convergence technology has two *possible* consequences: "that persons programmed in this manner no longer consider themselves the undivided authors of their own life histories, and that they can no longer and without any limitations consider themselves equals to those in previous generations" ([21], pp. 132f.). The autonomy of parents within the framework of

> society starts to emerge that would put an end to the principle of equality. Burying democracy beneath them, those who could afford optimisation technology would at the end stand opposite the outcasts who constituted the dregs of society [32]. However, this perspective would violate the maxim of treating all humans equally in preserving their chances in life.

The basis of these arguments is a form of morality that in essence is committed to natural law. This association results readily from the fact that the idea that man is a kind of "biological machine" within the limits of his evolution – natural yet today increasingly artificially controlled – does not immanently offer us any criteria for critically questioning the resulting situation. A perspective outside this developmental logic can only be founded by recourse to natural law[7]. Only by taking this step is it possible to see more than a machine in humans. It is precisely this "more" based in natural law to which man owes his subjective character and thus his elevated status in nature [33]. Quite rightly, it has been observed: "The confrontation between bioethics and constructive biology shows in an unexpectedly new way what significance the nature of mankind has for our morality....This very role of nature, inalienable and normative, cannot be reconstructed if we restrict ourselves to a scientific naturalism" [34]. Indeed, we cannot dispense with a concept of "second nature" which goes beyond "the nature that forms the object of biology" [34].[8] Without this assumption, man would be degraded to "a hardship case in society" [33], and be hopelessly inferior to the artificial intelligence of machines.

It is no coincidence that the relevant discussion does not always distinguish between Christian-traditional and modern subjective natural law: although the differences between the two variants are considerable [35], they do converge in their estimation of the uniqueness of human dignity. Traditional natural law derives it from the position in the universe accorded to each individual by God; modern natural law regards it as anchored in the individual as a personally responsible bearer of reason. But is this type of ethics not stigmatised by an irreversible birth defect? Traditional natural law, criticized lastingly by Hobbes and Spinoza,

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liberal eugenics to act as the designers of their children has its limits in their autonomy because a person can only lead their own life if a genetic corset is not artificially prescribed.

[7] Randolf Menzel contests precisely this consequence. Cultural information, and thus that of natural right, on the one hand, and biological information on the other are "so intimately intertwined that it does not make any sense to want to separate them, especially there where the formation of tradition, much of which even stems from individual learning, itself becomes a selective factor for biological and cultural evolution". (Randolf Menzel, personal communication, Jan. 26, 2007). Yet on the other hand he dissolves this unity when he concedes a certain, apparently independent, control capacity to the culturally mediated nature of man. In particular, he makes the "preservation (and perhaps even the continued development) of man", which could also fail and lead to the annihilation of the species, dependent not only on biological, but "especially" also on cultural evolution, "which sets the parameters" (ibid.).

[8] See here also footnote 6.

was already shown in the seventeenth century to be an ideology of the noble estate of the realm, while modern natural law has been historically relativised as a model for the legitimisation of modern bourgeois capitalist society. It is thus true that "the existence of human rights outside time and before social organisation cannot be proven" ([36], p. 114). Does this, however, mean that natural law has become obsolete as a regulative principle, particularly in its egalitarian form? No one can deny that it led to the development of rational standards on the basis of which "the worldwide status of political and social emancipation" ([36], p. 116) and thus the quality of civil society can be measured. It is also without doubt the case that natural law as a system of legal ethics and not as a part of positive law, makes available standards "of criticism and possible delegitimisation of positive law and of impetus for change and improvement of law " [37].[9]

In this sense the morality based on natural law is self-reflexive in a double sense. On the one hand, freedom in the sense of autonomy finds its limit in self-determination of the other. On the other hand, it is conscious of the limits of reason from which it is derived. Its limited scope proceeds necessarily from Kant's distinction between practical and pure reason. Thus the world of appearances, in which only positive knowledge is possible, opposes the sphere of things in themselves. The latter is the source of the practical postulates of morality, ethics and law, but also religion, which cannot be proven in a positive sense, but which have the capacity to guide the actions of individuals in the historical-empirical world as a normative guideline. At the same time, a totalitarianism of reason in the sense of instrumental rationalism is shown to be unfounded. In this sense, Adorno and Horkheimer referred to the "dialectic of enlightenment"; their goal was not to defame the enlightenment but to pursue enlightenment to show its own inherent dangers and limits.

The values of the protagonists of the new man of converging technologies are based, in contrast, on a so-called evolutionary ethics. Their system of reference is not the universalism of enlightenment but the necessities of evolution in the context of their relevant stages of development. For this reason, they rigorously reject the Kantian system of practical reason. "For Kant himself the highest norm was always to act in such a way that the maxims of one's

[9] Jürgen Habermas argues similarly. To be sure, in connection with the manipulation of the human genome, he rejects the idea that there is an order in natural right or ontology "that could be wantonly violated" ([21], p. 144). Yet this distancing from traditional natural right cannot conceal the fact that the pattern of his own critique is but a further development of Kantian rational right, and that can be taken to be the completion of the secular tendency of modern natural right inasmuch as he grounds its binding character for the first time – bypassing God as it were - a priori exclusively in human reason. In this sense, Habermas talks about the "abstract rational morality of the subjects of human rights," which finds its support in turn "in an earlier *ethical self-understanding of the human race* that is shared by all *moral people"* ([21], p. 74). He explicitly refers to Kant's categorical imperative and its demand that "every person 'at all times be considered as an end in itself' and 'never simply be used as a means'" ([21], p.96). Traces of modern natural right can still be seen when he discusses the individual who sees himself "as an autonomous and equal member of an association of free and equals," ([21], p. 132) or when he refers to "egalitarian universalism...as the great achievement of the modern period" ([21], p. 155).

own actions could be taken as a law for all of humanity. We must bid farewell to such universal moral principles which lay claim to absolute validity. As Mackie notes bluntly: 'There are no objective values'" ([38], p. 7). This argument proposes that evolutionary morality is based on Darwin's insight that man, like all other living beings, is the result of evolution by natural selection. In this context, morality also developed to serve survival. It is argued that early stages of moral behaviour can already be identified in chimpanzees and primates ([38], p. 39). Thus only cooperation made survival possible. Finally, according to this argument, our tendencies toward solidarity that arose in the history of the species, for which the egoism of our genes was a constant precondition, were followed quasi automatically by moral principles such as securing reproduction, the provision of resources and the sense of belonging to a group. More recent lines of research even proceed from the hypothesis that the social behaviour of man and animals is derived directly from genes. Yet social neuroscience, called social genetics, is still at an early stage. Thus while it was possible to show that neuropeptides play an important role in bee brains, "it could not yet be proved that specific genes in fact determine social function [in bee colonies]" [39]. If such a finding existed, from the point of view of evolutionary theory, values anchored in natural law would be shown to be completely unfounded. Their claim to validity, thus the argument goes, stands and falls on the contrary with the social conditions under which it gains acceptance.

But where, according to this theory, does this science derive the legitimisation to intervene and control the evolution of mankind? It results from the privilege that the researcher lives in a historical moment of time in which the process "of natural selection or the survival of the fittest" [40] has lost its primordial nature. The researcher has seen through the mechanisms of nature and is thus in a position to control them. Only now does he come to realise the moral duty in the name of the putative good of humanity to utilize the means offered by converging technologies to eradicate the deficitary results of evolution, which to date has proceeded blindly, and on the basis of a minimalistic morality to remove all barriers in the name of freedom of research and scientific progress. At the same time, pragmatic and utilitarian concepts of ethics which hark back to Locke, Bacon and Hume are reactivated for the recipients. The highest value is accorded to the dictum of Bentham according to which the aim is to achieve the greatest possible happiness for the greatest possible number. Evolutionary morality feels responsible not for self-reflexive criticism but for the acceptance of scientific and technological progress with the aim of advancing evolution. In accordance with this, a normative orientation is called for which is coupled to the autonomous course of scientific progress. He, who just as the course of science is always subject to change, acts

ethically "who facilitates the optimisation of being human, who makes *Homo sapiens* stronger, healthier and happier. A transhumanist – according to Julian Huxley – has the task of promoting maximal fulfilment of this evolutionary process in the world and in particular to work towards the full realisation of his own inherent possibilities. Huxley openly calls the blossoming of the individual the ultimate aim." [10]

It seems that the arguments of the critics of converging technology that are founded in natural law stand irreconcilably opposed to the evolutionary ethics of their proponents. What does this confrontation teach us about the relationship between science and values?

IV.

The two groups of political thought described above have conducted debates about the new man that have been so polemically exaggerated and frequently so emotional that one cannot deny the danger that something that belongs together may break apart, namely the socio-cultural and the biological nature of mankind.[11] One representative of the evolutionary approach writes: "If, as is now claimed, absolutely all behaviour depends on genes, where do different cultures get their different systems of morals? How does the relatively rapid transformation of civilization come about? The answer: man can utilise being particularly well-endowed with a set of behavioural genes - such as he possesses in a particularly elaborate way - to collect additional useful programmes through learning and ultimately acquire competence in acting reasonably....Man thus makes himself independent of his genome. Yet under no circumstances should we forget that this independence is completely dependent on this very genome" [41]. As one can see, in the attempt to uphold genetic monism, simple rules of logic are suspended and contradictory statements are overlooked,

[10] Kissler quotes Julian Huxley, who in a speech in 1962 described this perspective concretely, the counter-scenario to Aldous Huxleys dystopian dreaded image of a future genetically manipulated society, *Brave New World*. Julian Huxley here sees mankind as having the privilege of living during a decisive moment of the history of the cosmos; the one in which the powerful process of evolution becomes aware of itself in the person of the researcher. He adds that the improvement of man's genetic quality by means of eugenic procedures would remove a great burden of suffering and pain from the shoulders of man. Huxley considered it exciting that after man had been robbed of his primacy and a central role in the universe and accorded the status of an insignificant inhabitant of a small, remote planet among many millions of stars, he had now regained a central position and become one of the rarest precursors and torchbearers in the cosmic process of evolution. ([25] p. 116)

[11] As already indicated in footnote 5, Helmuth Plessner tried to analytically grasp these two spheres that constitute man by means of the distinction betwen "body-be" and "body-have". "Body-be" refers to the biological existence of man, while "body-have" implies the culturally mediated capacity of "objectifying" ones own physique and thus raising oneself above the animal kingdom. "Artificiality in action, thinking, and dreaming is the inner means by which man as a natural being can be in harmony with himself. By means of the interruption forced by the connecting links he has made, man raises his circle of life, into which he is embedded as an independent organism with needs and instincts for life and death, to a sphere above nature and closes itself there in freedom....Only because man by nature is half and can see above himself (which are related by nature), can artificiality form the means to be at harmony with one's self and the world....Thus whatever enters the sphere of culture demonstrates dependence on human agency and at the same time (and to the same degree) independence from it." Helmuth Plessner: Der Mensch als Lebewesen (1928), cited after [33], p. 576

such as that man as a cultural being is independent of and simultaneously dependent on the genome.[12] Reality is different. When Frederick II, the Hohenstaufen emperor, ordered an experiment to be carried out on a group of babies as part of his search for the original language of man, part of the experimental design was to forbid any verbal communication between the nurses and the babies and between the babies themselves. The result was clear. The infants died because it is not the genes but the cultural mediation of language which is constitutive for their individuation. Mankind had completed a great cultural revolution when men learned to control fire. Who could have the absurd idea of attributing this breakthrough to a change in man's genetic make-up?

Karl W. Deutsch convincingly described the mechanisms by which the sociocultural nature of mankind developed: "Man learns by storing experiences. An important factor here is feedback: from the individual, who tries out something new (such as dealing with fire) to society, which either accepts this new thing or rejects it. In turn, society communicates these new things to the next, the succeeding generation....The different speeds of learning are all available and present in the nature of mankind: the slow learning of the genotype, the fast learning of culture, and the even faster learning of the individual. Thus the more a society restricts and represses the individual, the slower it learns. The more it lets culture stagnate, the slower it learns. If it finally brought both cultural and biographical learning to a standstill, we would be back at the level of the animal world" [42]. Deutsch's approach rooted in the theory of learning shows that we must differentiate between the biological and the sociocultural natures of man. Precisely the fact that the latter decisively codetermines us separates man from machines and animals, a difference that evolutionary morality at least tries to relativise ([38], pp. 105 ff.) and in so doing becomes caught up in contradictions. On the one hand, evolutionary theory denies man any special status: since man is no longer essentially different from animals, "he is himself an animal, of course with specific characteristics, but these should not be accorded too great a significance since every species of animal has its own particular characteristics and is unique" ([38], pp. 106). On the other hand, it certifies man as being a morally competent being ([38], pp. 112). As I have shown above, evolutionary theory tries to derive this characteristic too from man's fight for survival by asserting, for instance, that cooperation and solidarity are necessary to ward off danger to each individual. Yet the rest of the animal world, subject to the same conditions, develop similar patterns of behaviour without developing the moral qualities which characterise mankind.

[12] This logical contradiction could only be resolved if man would admit that the genome does not "determine man's behaviour and capacities, but the spectrum of possibilities." Gunnar Berg, personal communication, letter to the author of Feb. 12, 2007.

A prime example of the monism of evolutionary theory is also the central argument of social biology: it disputes the difference between the first (biological) and the second (sociocultural) nature of mankind [43]. The difference between "evolutionary and thus biological" on the one hand and "learned and cultural" [43] on the other hand is regarded as obsolete. The really interesting question for social biology is rather in the problem of "which learning processes could have been brought forth by natural selection and for which reasons." Learning, thus the argument runs, merely carries out "the biological imperative in a quite particular way" [43]. This argumentation is not convincing for two reasons.

1. One should emphasise first its extremely hypothetical character. Again and again it must have recourse to formulations that refer to more recent investigations which "lead us to assume" or "suggest" the imputed social-biological monism without being able to verify or falsify it with empirical evidence.
2. The social-biological approach is not in a position to explain the above-mentioned different speeds at which the genotype, culture and the individual learn. Also undiscussed are the effects that the slow speed of learning of genes and the significantly faster learning of sociotechnological culture and – faster yet– of the individual have on the determination of human nature. Do they not strongly suggest the analytical distinction between biological evolution and the development of tools?
3.

It is not a matter of pleading for the old dualism of body and soul. All the empirical evidence indicates, however, that the genetic building plan has in no way consumed the "artificially" created technology culture. In any case, no proof has yet been provided that our genome has been able to completely break loose from the social and technological history created by mankind [44]. Yet there seems to be no doubt that there are correlations between the two spheres. Open-ended empirical study of the tensions and influences between the two areas appears to me a more worthy task than construction of a sociobiological monism.

We could go one step further. Namely, the converse of the biologistic monism of evolutionary morality seems to be true. The development of man's sociocultural nature had to be advanced enough that a researcher was intellectually capable of understanding the mechanisms of his own biological evolution. This supports the thesis of natural law that the optimisation of mankind has to occur in harmony with his biological and cultural or social nature. But the emergence of a canon of values that are egalitarian in nature and rooted in natural law assumes a high degree of sociocultural differentiation. The universalism of the

individual's basic and human rights since the mid-seventeenth century is thus the relatively late fruit of learning processes of culture and civilisation. Although evolutionary morality rejects universalism of this kind, a bioethics expert who is very deeply committed to Darwin's approach has to admit: "Nowhere in the world does a man *want* to be mistreated, tortured and killed. But if this happens anyway, it is morally wrong, completely independently of the culture to which the victim belongs. (And that, by the way, would be the only *objective* criterion for norms and values that was to any degree reliable)" ([38], p. 122).

In summary, the strength of the natural law approach lies in its avoidance of both evolutionary and sociocultural monism. Only the concordance of both gives man his status as a self-responsible subject who is in a position – beyond the bounds of genetic determination and instinct – to formulate categorical imperatives and to act according to them. Conversely, the natural law approach can definitely be reconciled with the evolutionary approach as long as the latter remains restricted to the biological nature of man. The attempt by the engineers of the new man envisioned by converging technologies to free the evolutionary standpoint from this tension means that their construction is nothing more than a sign of aberration.

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