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**TRANSHUMANISM AND THE WISDOM OF OLD GENES:
IS NEUROTECHNOLOGY A SOURCE OF FUTURE
HAPPINESS?**

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ABSTRACT. Technological progress seems to open ways for redesigning the human organism. This means that the affective system that is built into the brain by evolution can be redesigned with intent. One of the consequences will be that the word progress will get a new meaning. Progress won't be confined to enhancing the conditions of living, but it will change the way we react to the world. These possibilities are explored in a new kind of biological utopism called 'transhumanism'. This school foresees that a restructured human brain will give rise to 'more varied experience, lifelong happiness and exhilarating peak experiences everyday'. This essay considers the reality value of that expectation in the light of the current psychology of affects, in particular of presumed functions of hedonic experience. It is concluded that transhumanism overlooks that happiness will lose its meaning if it is treated as an isolated feeling. The affective system in our brain needs strong ties with the on-going interaction of the individual with its environment. Making people happier without enhancing the grip on their life will be contra-productive.

KEY WORDS: happiness, transhumanism, emotion.

'Homo sapiens, the first truly free species, is about to decommission natural selection, the force that made us . . . Soon we must look deep within ourselves and decide what we wish to become.'

Edward O. Wilson
Consilience, The Unity of Knowledge

INTRODUCTION

Few words are more future-oriented than progress. Still, most part of this special issue of the *Journal of Happiness Studies* deals with the past in relation to the present. What has changed in the last decades or centuries and what are the consequences for the well-being of people? One way to get to the future of happiness from here on is to extrapolate the results of this kind of trend studies. However, this is a risky endeavor. If there is one thing to learn from the past, it is that the future has always been different, and often more outrageous, than people imagined. As a



result, science fiction is a genre that ages very quickly and futurology as a science does not exactly flourish compared to other sciences. This is clear if one searches the Internet. Altavista gives 6,601 webpages for futurology, 592,155 pages for sociology and 1,397,500 pages for psychology (www.altavista.com). Futurology lacks prominence in a time period, when we most need it. Change is the only constant these days and a better grip on the future would be most welcome, but apparently, most people believe that nobody is able to give solid predictions of the future.

Humans are simply too shortsighted to look in the future. Probably foretelling the future is even theoretically impossible, because of the chaotic nature of reality. Minor events can make all the difference, because they can lead to a cascade of changes. Or to use the cliché, a butterfly can sometimes 'cause' a hurricane, according to some meteorologists (Stewart, 1989). Since it is impossible to take into account all the movements of all butterflies, it is impossible to give the weather forecast for too many days ahead. The same is true for the living animals. The Nobel prize winner and theoretical physicist Gerard 't Hooft predicted during a lecture several years ago that it won't be long before physics will have its theory of everything with an understanding of all elementary particles. However, he also told his audience he thought that two hundred more years of progress in science will not make it possible to predict the course of a dancing mosquito around a lamp. (For a more theoretical sound introduction in the chaos theory, see for example [http://amath.colorado.edu/appm/faculty/jdm/faq-\[2\].html](http://amath.colorado.edu/appm/faculty/jdm/faq-[2].html)).

The changes of foretelling the future of happiness are much slimmer. The subject is much more complex and the state of the art in happiness studies leaves a lot to be desired. All this seems to make writing and thinking about the future of happiness a silly enterprise. However much depends on the level of analysis. One cannot predict what will change, but it is much easier to predict what will remain the same. If we stick to the examples above, it is easy to predict that most butterflies will not cause hurricanes, that the weather in the winter will be colder than in the summer and that mosquitos will still dance around lights.

This kind of regularities also feature in this issue of the *Journal of Happiness Studies*, for example Heylighen and Bernheim state that there has been significant improvements in different areas of life, like wealth, health, security, knowledge, freedom and equality.

If we look at the enormous differences in living conditions in the world today, one can expect that more objective progress and life satisfaction will be possible in the future for the more disadvantaged. Bulmahn (this issue) shows that people have a surprising ability to adapt to changing conditions and to modernity. The human species evolved in the African savanna (e.g. Corbalis, 1991; Wills, 1994), but this does not make it impossible to enjoy life in modern industrial societies. We made a successful transition from caveman to computerman (<http://www.hilson.org/writings/evolu.htm>) and our biological make up will probably allow us to live happily in a future information society as well.

TRANSHUMANISM

The predictions so far may hold if the future won't be too different from the present. However this is doubtful because of the rapid changes in science and technology. The human genome is about to be unraveled and we are in the middle of a computer revolution. We can expect DNA-manipulations, man machine combinations, nanotechnology, organ replacement and much more. We may gain the power to redesign the human body and mind. Or to paraphrase a slogan of a big Dutch electronic company: Let's make ourselves better.

There are two different reactions to this prospect. The first can be characterized as conservative romanticism. This reaction consists of turnings one's back to science, technology and reason and this seems to be a common reaction nowadays, as can be seen from the New Age, alternative healing and spiritual gurus (Calne, 1999; Douglas, 1992). Transhumanism is a representative of the second reaction that is much more optimistic and can be positioned in the long-standing tradition of Enlightenment and utopianism. The developments that are feared by romanticists are embraced by transhumanists.

The World Transhumanist Association gives the following definition of this life philosophy: 'Transhumanism is the philosophy which advocates the use of technology to overcome our biological limitations and transform human condition. The accelerating pace of technological development opens up such revolutionary prospects as superhuman artificial intelligence and molecular nanotechnology. The consequences of these developments may include the biochemical

enrichment or redesign of our pleasure centers so we can enjoy a richer diversity of emotions, life-long happiness and exhilarating peak experiences every day; the elimination of ageing; the abolition of disease; and perhaps the gradual replacement of human bodies with synthetic enhancements and computers' (<http://www.transhumanism.com>).

Transhumanism is humanism with an extra: the strong belief that reason, science and technology will result in social, physical and mental improvements (Mul, 1999). On the Internet one can find predictions that in fifty or hundred years life will be eternal. The only question seems to be whether humans will be immortal or maybe life will be taken over by posthuman intelligent machines that may place mankind on a sidetrack. Another possibility is that humans will be upgraded with computer technology, so that they will have better memory, better intelligence and better coping skills (<http://members.brabant.chello.nl/~h.kluytmans/transh.htm>). In the future we will not need a life after death, because we can reach heaven on earth. Life will even be better. We will reach 'a loveliness that transcends any fantasized Christian afterlife' (<http://www.paradise-engineering.com/heaven.htm>).

If you think that quotes like this are not from peer reviewed journals than you are right, and it is easy to dismiss them entirely. However, this kind of speculation is an (extreme) extrapolation of the spectacular developments in computer technology, biotechnology, genetics and neurotechnology in the last decades. And it seems clear that scientific developments will really make it possible to make major changes in human nature. For example, we may 'correct the code' to cure or prevent genetic diseases (Thompson, 1994). But if we can change genes that cause diseases, why shouldn't we change the genes that makes us unhappy?

The developments in neurotechnology are equally impressive. At the moment it is possible to a certain extent to build chips into the brain. They can give a rudimentary form of hearing for people who are deaf, some vision for people who are blind and a certain amount of movement for people who are paralyzed (van Gelder, 2000). And one should not forget that there already have been extensive experiments with psychosurgery to cure psychiatric diseases, although most scientist and physicians regret this happened (Pressman, 1998; Rodgers, 1992). If the materialists are right and Cartesian dualism is wrong (e.g. Dennett, 1991) then I do not see any logical reasons why it will

be impossible to change the mind in ways were not imagined before. Maybe the brain is a Turing machine just like a computer and the mind can be stored in different media (Johnson-Laird, 1988). So further technological developments may make it possible to download the human mind into another medium. If one wants to climb the Mount Everest and dies because of an avalanche, there may be a backup copy to resume responsibilities at home.

I focus on the more extraordinary aspects of this kind of these predictions to show how difficult it is to say something useful about the unknown future. We can quote a song text of Queen and ask: 'who wants to live forever?' The answers do not come from science, but may be found in literary thought experiments. Simone de Beauvoir (1945) wrote in *Tous les hommes sont mortels* about Fosca. He was born in 1279 in Italy and discovers that one life is not enough to fulfill his mission. He takes a special potion and does not age any more. He goes to war, lives in peace, goes to war again, loses the persons he loves and is not able to bear life any more. He has seen it all, and it is all the same again and again. Everything loses its meaning. The moral of this story seems to be that death is not something to look forward to, but it is not as bad as immortality. The account of de Beauvoir is persuasive. Maybe all the excitement in climbing the Mount Everest fades if a backup copy is waiting at home. Losing is no fun, but gambling is utterly boring without this possibility.

However, Virginia Woolf (1928) gives a more positive account of a very long life in *Orlando*. The very long life of the principle character seems bearable enough and he (later in the book she) doesn't suffer from his/her conquest of time and death. I can think of no way to decide who is most realistic. Is it de Beauvoir or Woolf, or is immortality a good idea for some and not for others?

But as said, this is a subject for novels, movies and science fiction. All these genres gratefully exploit the possibilities of future scenarios and the cyborg (a mixture between a robot and a human being) is a common character in movies. But for an essay that is supposed to be scientific, it is too difficult to find some foundation. What we can do however is to focus on one important aspect of transhumanism. We can explore whether it is possible to change something in the affective system of the human brain that will make people happier. Are there any built-in weaknesses of our emotions that should be repaired by the neurotechnologists or geneticists of the future?

CAN WE ALWAYS BE HAPPY?

The first thing to notice is that this question perhaps gives modern technology more credit than it deserves. Of course, progress in this field has been very impressive, but if we compare human inventions with the ‘accomplishments’ of evolution, it is clear that biology has not met its match. Biological machines are much more complex than the most advanced computers; it is estimated that the best computers have the same computational capacity as a snail (Steven Pinker, personal communication; Bergsma, 1999). Moravec takes the human retina as an example to estimate the computational power of numbers of neurons. This brings him to the conclusion that modern personal computers have comparable computational power as spiders. However, if progress in the information technology will be as fast as in the last decades, it can be expected that the computer will match the human brain in 2020s (<http://www.transhumanist.com/volume1/moravec.htm>). But as said, extrapolations like this are not always reliable.

The same sobering story can be told about genetics. Scientists are mapping the human genome, but we are very far from understanding how the genes interact and help the brain to develop. As yet, geneticists are unable to cure diseases like Huntington’s that are caused by one single gene, so it will a very long way before we will be able to redesign the human brain that is formed by the complex interaction of a whole lot of genes.

The amount of work that needs to be done before we can redesign our pleasure centers is enormous, but this should not keep us from inventions that give us ‘life-long happiness and exhilarating peak experiences everyday’. But how should we redesign our pleasure centers? On the Internet it is easy to find the prediction that it will be done and that future generations will live happily ever after because of it, but I could not find a description of *how* the new design of the pleasure centers should look like. In this article I will speculate about the options and whether or not they will make us happier.

An important obstacle in redesigning the affective system in our brains is the realization that emotions and mood cannot be considered in isolation. They are not the products of our pleasure and pain centers *per se*, but they play an important role in the interaction of the individual with their surroundings. Emotions are built into mammals by evolution to evaluate the ongoing interaction. Pain means that the current situation

should be avoided and pleasure motivates the organism to keep the situation as it is (e.g. Frijda, 1988; Lazarus, 1991; Bergsma, 1995). Thus: happiness is the result of favorable living conditions and unhappiness results from the opposite. This can be seen from a comparison between nations. In rich, individualistic, democratic countries the great majority of people consider themselves to be happy, but this is not true in poor, developing countries (Veenhoven, 1996). So it is quite possible to raise the happiness of people in developing countries, but the way to do it is to raise the standard of living and to end wars. Objective progress in well-being is possible (Heylighen and Bernheim, this issue).

But what should we think of the transhumanistic solution? Suppose that it is possible to create a kind of short circuit in the brain so that somebody feels great whatever happens. It is hard to imagine that this person is able to survive. If something dangerous happens, the person will not flee but stays relaxed. The consequence is that he or she gets run over by a truck. The good mood will also make it impossible to become angry when somebody else harms the best interests of the happy person by mere carelessness. If somebody is only capable of happiness has a partner that dies or cheats, he or she will not feel grief or jealousy but remain happy as before. But this kind of living seems worse than immortality. Why shall you ever get out of bed or do anything, if you feel happy, whatever you do? Why shall we eat without hunger? Without pain and unhappiness life has no drive and loses its meaning.

The person with the overactive pleasure centers reminds one of the patients described by Damasio (1994) with frontal lobe damage. A classic example is Phineas Gage who was working on the railroad, when an explosion damaged his frontal lobes. His academic intelligence seemed to be spared, but his emotions were disconnected from his cognition. He lost his sense of direction in his life and couldn't cope anymore. Faced with a problem, he could name alternative solutions, but still he didn't know what to do. Modern patients with the same syndrome may score perfectly normal on IQ tests, but their ecological intelligence is insufficient and they fail in life the same way as Phineas Gage. Without emotions to keep right and wrong apart, they lose their sense of direction. We cannot cope without the distinction between pain and fear. So the same rule must apply when we only can experience happy moods. We even need positive and negative emotions for judgment processes that are considered by lay men as non-emotional and purely cognitive (Ketelaar and Clore, 1997).

Also, we do not need to wait for new technological developments to be able to stimulate the pleasure centers. Drugs like heroine and cocaine do just that (Crow, 1972). In the short term this gives pleasurable feelings, but long-term the consequences are mostly negative. The reason seems to be that the drug induced positive feelings are not related to the situation of the user in the world. Drug addicts are constantly searching for good feelings, but let their life deteriorate, because they temporarily feel good in bad circumstances. They often have a lifestyle that nobody envies (McKim, 1986).

The simple transhumanist solution to create short circuits in the brain in such a way that everything that happens gives rise to good feelings, creates persons that reminds one of the laboratory rats from every introductory text book in psychology, that could stimulate the pleasure centers by pressing a lever (Olds and Milner, 1954). They were so busy doing this that they forgot to eat and died of starvation (Spies, 1965).

Perhaps this is an image that is too degrading (<http://www.wireheading.com>), but the major point is that pleasure is only one dimension of a good life. In addition to it, we want a life that is meaningful as well. This point can be elaborated with a case story of the neurologist Klawans (1990). He describes a patient with complex partial epilepsy. Most symptoms are reduced thanks to medication, but one symptom remains. She sometimes is taken over by a warm, intense orgasm lasting for about one minute. Klawans asks his patient if she wants to try a new medicine to stop these insults. The answer is affirmative. She has a satisfying sex live and she does not want orgasms when she takes her children to the dentist in a car, however pleasurable the insults are. Other patients seek treatment for these kind of divine insults as well, although Dostojevski wrote that he didn't wanted to miss his insults, not for all the joys of life. It was his trip to paradise.

Another line of research that leads to the same conclusion that in general we want pleasure in life, but we need the dimension of meaning as well comes from the controversial work of Heath. He implanted electrodes in test subjects and he gave them the possibility to stimulate their pleasure centers. His conclusion: 'People don't self-stimulate constantly – as long as they are feeling good. Only when they're depressed does the stimulation trigger a big response. There are so many factors that play into a human being's pleasure response: your experience, your memory system, sensory cues . . .' (Hooper and Teresi, 1991). And besides that, we have emotions about emotions as well. We may well

feel disappointed by our intense pleasure, if it generated artificially. Maybe people will be happy to escape the artificial 'life-long bliss' to return to old-fashioned positive moods that alternate with periods of misery.

Without pain to accompany pleasure our mood will be shallow, like that of the ancient Greek Gods. The philosopher Jacobs (2000, p. 66) writes: 'Think of Zeus. He sacrificed his son Sarpedon for Troy with indifference. In a desperate attempt to participate in the human passions the Gods fall in love with humans. This enables them to worry about the fate of their loved ones (. . .). But they do not really succeed.'

The moral of this story is that genetic engineering and neurotechnology that only aims to change the pleasure centers will have serious shortcomings. We do not need more pleasure *an sich*, but we also need things to do with our lives that are meaningful to us. Better pleasure centers are just a small part of the picture.

VIRTUAL REALITY

For good functioning we need emotions that have a close relation with the things happening around us. As Freud pointed out man has to live by the pleasure principle and the reality principle (e.g. Badcock, 1988). The pleasure principle is the innate tendency to maximize pleasure and to minimize pain and the second principle states that one cannot afford to lose contact with reality. However, transhumanism suggests a radical solution for this problem. In normal life reality imposes limits on the pleasure principle, but in a virtual reality the environment can be governed by the pleasure principle.

The first thing to notice is that it is probably impossible to create a virtual world that is rich enough to interact with freely. Dennett (1991) has described that it will be possible to create the illusion in a person that he lies on the beach in the sun. However as soon as one gives this person the possibility to move, the amount of feedback data needed explodes. A hand that digs in the sand needs different feedback, depending on the force of the movement of the arm. The combinations possible are so enormous that it will be impossible to plan them all in advance. According to Dennett this can be compared with computer games. Interaction is possible with them, but only because the player has a limited range of options to act. If one chooses to live in a virtual reality

one has to be deemed to play *Space Invaders* all the time. This example is ten years old and already outdated. Virtual reality offers experiences that are much better than this ancient computer game, but the theoretical point of Dennett is still plausible. The designer of a virtual reality has to limit the options for free exploration, because of the amount of data needed otherwise.

So even in virtual reality it is impossible to escape reality completely, but for arguments sake we shall forget these limits for a moment and pretend that an ideal virtual life is possible. Dennett described this virtual world in an interview as follows: 'Everything you dream of will happen. You will win the Nobel prize, marry Michelle Pfeiffer, live in the best thinkable house and so on. And you will not realize that you are misguided by a machine, because you have taken a pill that has erased your memory of your former life' (Bergsma, 1997).

In such a virtual world you will be as happy as your – ancient or redesigned – genes allow, but if you will offer people this 'possibility' most refuse, because they do not only want to be happy, they want to be right as well (Nozick, 1989). We want to avoid illusory happiness and we cannot afford it. Kraut (cited in Averill and More, 1993) has made this clear with a thought experiment more realistic than the one cited above. Imagine you are still in high school and voted the most popular student by your peers. You are elated because of this well-deserved recognition, but afterwards you discover it was a cruel hoax: in reality you are the laughing stock of the school. The happiness you felt on the evening of the election is not something to think back of with gratitude. We want to be happy, but we have reason to avoid illusions. Averill and More (1993) summarize this with the statement that feeling happy is not always the same as being happy. Reality has to align with the pleasure you experience. In the future virtual reality will probably offer all kinds of new sensations and no doubt some of them will be pleasurable enough to enrich our lives, but it is not likely that the virtual world can replace reality and buy us lasting happiness.

POSITIVITY OFFSET AND NEGATIVITY BIAS

We have to accept that reality limits the amount of pleasure or happiness we can experience. A possibility open for transhumanism is to soften the pain one has to endure. However this proposition is not feasible, because of the important functions of both pain and pleasure. A closer

look at the functions of both show that changing them would have side-effects. The design of the affective system is very clever as it is.

Positive and negative emotions are calculated by separate neurological systems. We start out with the positive system. This tends to respond mildly positive in neutral circumstances. Cacioppo and Gardner (1999) describe this as *positivity offset*. This means that the person will feel weakly positive in neutral circumstances. The reason for this is that we need positive emotions to keep us going. Without them we would not explore novel or neutral appearing environments and we would miss possible means for survival. One of the results of the positivity offset is that we evaluate things that are neutral in a favorable way. We tend to appreciate the unknowable future, the average person or an unfamiliar Chinese ideogram (Cacioppo and Gardner, 1999). This also explains why people whose basic needs are fulfilled tend to view their life in a positive light (e.g. Veenhoven, 1984). People in rich countries tell researchers that they are happy with their life as a whole, probably because they are in a mild positive mood most of the time (Headey and Wearing, 1992).

Evolution has built the positivity offset into the brain to make sure we will not miss too many opportunities. But the need for survival (or offspring to be more precise) imposes clear limits to exploratory behavior. Exploring should not cause great dangers. The *negativity bias* in the neural circuits for negative emotion makes sure we avoid dangers very promptly. Negativity bias means that we react more strongly to negative situations than to positive ones. Because of this asymmetry the negative emotions can easily override our tendencies to approach. The logic behind this is that 'it is more difficult to undo the consequences of an injurious or fatal assault than those of an opportunity unpursued' (Cacioppo and Gardner, 1999). In danger we feel a strong urge to run and when angry we are strongly inclined to act and to undo the harm done by others.

The asymmetry of positive and negative affect is also apparent if we look at the duration of these feelings. Negative emotions last much longer than positive ones (Frijda, 1987). The logic behind this is identical to that of the positivity offset and the negativity bias. If a situation harms our concerns, we cannot afford to ignore this. The negative affect lasts and keeps us eager to change things for the best. However a strong and lasting feeling of joy would make us passive. We would not have to do anything after we reached the top. The fading of the peaks of joy

leave us in the pursuit of more goals. This is a paradox for transhumanism. A stronger belief in progress than that of transhumanism is hard to imagine, but if the transhumanists would change their pleasure centers to experience lasting happiness, the motor of change would stick.

There is a strong evolutionary logic for intense pain and mild joy, and it is difficult to imagine circumstances where we can afford to change this. We should not soften the pain or intensify the joy in healthy individuals who are functioning well, because otherwise the quality of the individual's interaction with the environment deteriorates. The story may be quite different for persons with a mood disorder, but that is another subject.

REALITY THROUGH PINK GLASSES

The discussion so far about positivity offset and negativity bias and the temporal differences of positive and negative affect has made it clear that there is no one to one correspondence between things that happen in reality and our affective reaction to it. Emotions are not pure. This becomes even clearer if we realize that our emotional reactions are dependent on the meaning we attach to a given situation (e.g. Frijda, 1988; Lazarus, 1991; Izard, 1991). The relation between reality and our emotional reactions to it is strained. Maybe we can win a little happiness by taking this one step further. Can transhumanists shift the balance between the pleasure and reality principle a little, so that we feel better without disturbing the interaction of the organism with its surroundings too much? This will be a more subtle manipulation than the one described above. The suggestion discussed above was to soften the pain and to intensify pleasure by changing the emotional measuring-instrument in the brain. But this time we do not change the range of emotional experiences, but only try to accomplish that everybody will develop a rosier image of reality. Pain will become less frequent because of it, and often less intense. The opposite will be true for the positive emotions. Is this a serious possibility? The answer is 'Probably not'. Evolution already has stretched this possibility to its limits.

Most revealing is how we view the world. In general we have a positive worldview, or to use the phrases of Rimé, we form a symbolic universe that is just and in which life has meaning (Rimé, 1999; Bergsma, 1999b). Also, in our symbolic universe we ourselves are important, worthwhile, better than average and safe. We 'suffer' from

positive illusions and it has become clear that without it we are at risk for depressions. The phenomenon called depressive realism describes the tendency of mildly depressed people to view the world as it is and themselves as they are. Only severely depressed persons suffer from negative illusions (Collijn, 1991).

Reality is too difficult to bear, as Freud put it (Ladan, 1999). As a result we have developed all kind of defense mechanisms (Freud, 1936), or to put it in theoretically neutral terms, we have an amazing ability for self-deception (Ford, 1996). An anecdote tells this story the best. An international expert on the subject of denying the symptoms of heart failure, died of an heart attack, when he wanted to mount a horse because he himself had denied his own symptoms of heart failure (Ford, personal communication; Bergsma, 2000). This blindness for one's situation is not unusual. Patients who have been told that they have a fatal disease often go on to make plans for the future and forget the prognosis of the physician (Frijda, 1987). The need for positive emotions is so strong that we form a picture of reality that suits our own needs, and sometimes we suffer the consequences, as in the case of the expert on the denial of heart symptoms.

One last example makes this point. One of the main functions of religion is to give live meaning. It gives solace that the setbacks you experience have a deeper meaning, even when this is difficult to see this yourself. Religion offers an interpretative framework and may increase feelings of efficacy, control and security. Marx described religion as the 'opiate of the masses' and religion has indeed a slight positive correlation with affective well-being (Diener et al., 1999) But how do people react when they lose their religion? This has been a mass phenomenon in the last decades in the Netherlands. More than half of the Dutch population is no longer affiliated with a church anymore, but still a comparison between nations tells us that the Dutch are relatively very happy (Veenhoven, 1996). How is this possible? The flexible way in which we twist reality to suit our needs gives a part of an answer. Many Dutch people have lost contact with official religion, but as a result they have formed more personal religions and have constructed their own images of God, like the adherents of the New Age movement do. If the church no longer gives our life a meaning, we invent a new religion to find shelter for the harsh reality (Janssen, 1998).

Besides, changing the balance between the lust and reality principle is not a new phenomenon. This condition is known as mania or

in a mild case hypomania. The mood of a person with hypomania is described in the DSM-IV as 'euphoric, unusually good, cheerful of high' (and may also be irritable). The person with hypomania has an inflated self-esteem, is more involved in goal-directed activities and has much energy. But one of the dangers is an 'excessive involvement in pleasurable activities that have a high potential for painful consequences (e.g. the persons engages in unrestrained buying sprees, sexual indiscretions, or foolish business investments)' (APA, 1994, p. 338). Even the mild state of hypomania can better be avoided, because the grip on reality fades to an extent that the long-term consequences are too painful.

CONCLUSION

The need for positive emotions and moods is apparent and humans with an excellent mental health have a strained relationship with reality because of this. We will stretch reality to suit our needs and sometimes suffer consequences because of it. One step further and we fit the diagnostic criteria for a mental disorder. This leaves not much room for transhumanists who want to enhance happiness along these lines. The pleasure principle is powerful enough as it is.

The other discussed transhumanist options to create more pleasure by living in a virtual reality or by stimulating the pleasure centers more often, did not seem to be productive either. The blind forces of nature that designed our affective systems did quite a reasonable job and it won't be easy to outperform biological evolution. If we look deep into ourselves and must decide what we wish to become, we can perhaps answer that the design of the emotional circuits in our brain does not leave much to be desired. This is in line with the conclusion that most people in modern industrial societies are quite happy as it is. As long as progress does not push us to the limits of our adaptive potential, the best option is not to redesign our brains, but to change the world we live in. Maybe science and technology will make a better world.

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