The Brain, Soul & Illusion of Truth

Karol Ondrias

Translated and edited by
Emma Nezinska

To my son Jurko and his peers
for the many lucid questions

Nothing is real, or if it is, we don't know it. We have no way of knowing the truth. Truth is at the bottom of an abyss.

– Democritus

Don't believe everything you read!

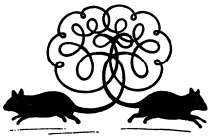
– A not very ancient maxim

English language supervisor: Graham Reed

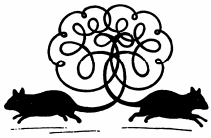
Front cover design: Jurko Ondrias
Back cover author photograph: Lubica Malekova

Picture Credits:
Figures 1, 2, and 3: Karol Ondrias
Figure 4: Jurko Ondrias
Personal logo: Rats‘ tails as a symbol of confusion. From Children‘s book illustration, F. Pocci, 1846

Contents



Preface



This lengthy essay is a modification of the book „The Brain, Consciousness & Illusion of Truth“. It is a format I've opted for in a bid to share with others my perception of some human phenomena that have long intrigued me. For example, why should people with reasonably equitable access to the same information contents eventually pursue widely diverging approaches to things vital to shaping their societies and personal identities?

Take the abortion question, which came to the fore in the 1970s and has since figured quite prominently on the top of public and political agenda across many nations. There are some who are firmly convinced that induced interrupting of pregnancy as a means of birth control is something morally impermissible and appalling, if not verging on homicide. Understandably enough, the proponents of this pro-life viewpoint disapprove of any policies leading to the legitimization of induced abortion on demand. Another, pro-choice group, are equally convinced that a pregnant woman alone is entitled to take decisions on whether to give birth to a child and shoulder a life-long responsibility for its upbringing or not. The collisions between the advocates of the two horns of the abortion dilemma have reportedly involved many violent assaults and even exacted their irreversible death toll. What is stunning, in this context, is that the people on both sides of the fence must have been goaded into the incriminated violent action by roughly the same amount of shared knowledge relating the induced abortion issue and its eventually far-reachingimplications for societal

efflorescence. Mind, although members of the belligerent camps have been sharing the same physical and symbolic environment, their personally valid 'worlds' must be widely apart.

More similar paradoxes inflict the issues of faith, splitting humankind into religious people and so called nonbelievers. Some may identify themselves as Catholic Christians and believe in God and the Word of the Bible. Many others, on the contrary, believe neither in God nor in the truths professed by the Scripture. This fact, again, is nothing if question-begging. How can it come about that people from my neighborhood, who must have had approximately the same amount of knowledge available as regards religious matters and could have freely chosen which facts to believe and which not, have arrived at such clean opposite conclusions when it comes to their religious feelings?

I am equally puzzled by the fact that over half of the Earth's population believes in the existence and operation of supernatural agencies which can allegedly interfere with the human world and destinies through controlling and affecting both. Isn't it pretty perplexing that today, in the age of vigorous scientific and technological progress, so many people still believe that such literary religious monuments as the Bible, the Koran, the Rig Veda, the Dhammapada or the Tanakh are *sacred* in the strict sense of the word? And that we ought to obey their moral commandments drawn for times now gone? And to embrace their cosmologies and social blueprints – the ones which have been overtaken by modern science and are presently calling for revision in the light of the changed circumstances? Further, it strikes me as particularly amazing that contemporary advances in science and scholarships have failed to win on their side most of humankind; that traditional religions and patterns of belief in the supernatural (gods and the immortal soul included), which are products of societies long extinct, keep their hold on the modern mind and

imagination. Astonishingly, scientific and scholarly accounts have failed to establish themselves in any statistically significant degree over superstition, prejudice, and a ready belief in the supernatural.

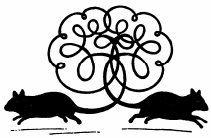
The message of this essay boils down to a simple assertion that faith, conviction, consciousness, the soul and even so called free will derive from the human brain function. The latter is, in turn, met by the brain's 'hardware and software equipment'. The ensuing considerations seek to argue that all of the cited states and forms of the human mind do have their physical correlates. Further, as one of these, the human brain creates *illusions* of truth about the world outside our heads. The contents of these illusory presentations are in each separate case conditioned on the specific hardware and software equipment of the individual brain *rather than* on the hard facts found in the outer world. I will try and show that man is just a biological machine controlled by a program supplied by its hardware and software equipment. This biological machine, it is essential to point out, displays close affinities to many other programmable entities found on the planet Earth. This is not by any means to say that I am going to deny humans a couple of very special features inherent to their species. (Contemporary science, I assume, has gleaned a great deal of evidence to endorse the above views.). But people nowadays aching to return to 'basic' values, I would like to shed some additional light on the latter's tangled roots concealed in the dark evolutionary and civilization catacombs.

Opinions highlighted on the pages of this book are, in fact, what I for now consider to be fairly defensible in light of the facts I know of and the inferences they have allowed. In other words, the views I intend to share with you are just the mental output of my brain's hardware and software work in processing the information derived from the real order. I don't think there are a great

number of people at this moment in time who would subscribe unconditionally to the thoughts and feelings this essay seeks to explicate and promote. Needless to say, this is exactly what has provoked me into writing this essay. I'd like to widen the ranks of those who don't take things happening around them for granted – through stirring doubt and possibly planting into my readers the bug of a desire to see through all guises of illusion, surrogate or make-belief. The diction of the book, as the reader may find while reading further, is tentative and in no event imposing. Lastly as it behooves a text that seeks to recruit sympathizers with ideas that are often at odds with common sense notions.

Karol Ondrias
9/9/1999, modification 10/20/2007
Bratislava, Slovakia

Introduction



Res natura and their secrets

On completing my university and doctoral studies in physics, biophysics and molecular biology, I have acquired a fairly consistent appreciation of natural laws and regulations controlling organic and inorganic matter. Also, a patchwork of humanities we used to be exposed to during the university course, has provided me with some helpful insights into the regularities on which the entire magnificent enigma of the universe, human society included, runs. Many tantalizing mysteries left loose on the fringes have never ceased to intrigue me. Nevertheless, what has always puzzled me yet more is the approach most people take to the things that, in my opinion, just cannot help striking one as mysterious and inexplicable. Oddly though that may be, nine times out of ten people are not interested in what is *really* going on all around. They, for instance, tend to relegate a host of biological and physical processes, particularly the ones which defy immediate pigeonholing, to the realm of *natural* phenomena to be taken in a matter-of-course manner. It does seldom occur to lay men and women to stop and challenge the commonly accepted accounts of such phenomena, let alone to try and dig deeper for the sake of unveiling the reality hidden behind.

With me, too, a television set used to be an enigmatic and over-sophisticated devise until, at my university course in Applied Electrical Technologies, I was exposed to the laws and principles guiding its work. I used to believe at that time that people with little education and

training in physics and electrical engineering could not help being perplexed and fascinated by this technological miracle, actually by the fact they could see moving pictures behind the glassy screen – people, cars, and planes – and even hear voices, noises, and tunes. I remember asking people if they were not surprised by that. No, they weren't. Most of my respondents were perfectly content to know that a television set would be functional when plugged in and equipped with an antenna to catch some sort of waves. On the contrary, their 'telly' would not function, they had been instructed, when unplugged or disconnected from that all-important antenna. That's it. This much was just enough for them to enjoy their favorite programs, the rest having been discarded as irrelevant or unexciting. Yet what my representative sample would so readily dismiss was *the Mystery* clamoring for attention. No one seemed keen on the processes involved in the performance of the gratifying invention. None felt like learning more about the regularities operating behind the screen.

Equally, people would just shrug their shoulders when asked about their conception of such ordinary miracle as growing up of a tree from a seed. You throw a tiny seed into the soil to have it sprouting forth and gradually uncoiling, just like that, into a huge, ramified tree! But people would not be altogether surprised. They just would take the whole thing for granted, i.e., as something 'natural'. Rather, they would be puzzled should a tree grow without any seed having been sown. *That* could be worthy of the name of 'mystery'! But this very disinterest in what really underpins appearances – along with the consequences of this deficient popular curiosity – have sparked my inquisitiveness. Why don't people find such things essential? Why do most men and women contend themselves with fuzzy folk notions? Are humans just 'dull of soul'? Why are they overwhelmingly immune to wonder or to the temptations of the virtual appreciation of what's going on all around? What hides at

the root of universal human penchant for comfortable half-truths and self-deception? One thing is sure: it is not their alleged muddle-headedness that is to blame. Rather, what may be at stake is some sort of the inherited wisdom out of the old days. If so, isn't it long antiquated?

Our early ancestors, I'm inclined to suggest, must have shared with us this alienated, black-box approach to the enigmatic. Extensive historic evidence indicates that most people in olden times did not bother about the 'why' and 'how' of things they had to deal with in their daily lives. It came to them as natural to be able to see, to hear, to think, and to breathe. Again, they were not wont to question a seed transforming itself into a tree. Nobody suspected a potent mystery behind, let alone a catch. Part of such awkward questions have been addressed by a negligible fraction of humanity, others have never been raised. The intellectuals in the remote past tried to account for some of the mysteries by writing and compiling sacred books. These would supply tales of the beginning of the world and the man, and of the human soul – the ultimate enigma of old times, the close secret of *all* times. The invention of a God as the absolute prime mover has turned out to be a smart solution to many standing puzzles and anxieties. What's more, the newly discovered supernatural agency has added more coherence and cogency to previously pretty disparate accounts of the world. But today we find ourselves confronted with many new and no less challenging mysteries than the ones that used to vex the dawning minds of our early ancestors. It may well be the case that in one or two thousand years the questions which seem so compelling today will have fallen into insignificance. Or future generations might find them infinitely petty and severely embarrassing. This is for one thing. For another, people nowadays just cannot anticipate the many tantalizing mysteries and riddles that are most likely to spring up in, let's say, the fourth or fifth millennium for

our posterity to meet head-on or postpone for the lack of evidence.

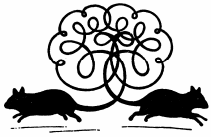
Discerning a mystery and unlocking it takes a very special ability, or a talent for such things. Some among us may be quite advanced in recognizing where to pause and to dig deeper. How do people identify problems that no one else has thought of before? Among the many fascinating tales of serendipity, the one of the British bacteriologist and a Nobel laureate Alexander Fleming, also knighted in 1944 for his contributions to science, is a textbook case. Similarly, the founder of the Web, the British Tim Berners-Lee, now leads the World Wide Web Consortium. When asked about his invention, he would recall his time at the CERN laboratory in Geneva where, instead of smashing atoms, he determined to build something.

The above brings me to the conclusion that asking ultimately simple questions perhaps entails the anticipation of a 'higher' order just lurking behind them. Such capacity for 'smelling a mystery' is a qualitative attribute of 'select' brains that enables them to do the job of thinking in a way not to be mimicked or learnt. In some people this ability to identify problems that no one else thought of before may be more vigorously present than in others. So, the brains of some people, equipped with their more 'nosy' individual hardware and software – which might have been additionally honed and tuned in through training – normally smell the mystery where others just stay unexcited and pass by. The negligence of the puzzles nestling in natural and pedestrian things is ubiquitous. Quite a number of my acquaintances and some fellow researchers at the institute seem to overlook, for instance, glaring 'enigmas' hidden in visual illusions (I shall address these in the ensuing chapter). Yet the deconstruction and appreciation of 'obvious' things is, to my mind, essential for shaping opinions on the brain function and on what is involved in the pursuit of the self. For bearing with me through the pages of this essay, it

may be instrumental for the reader to postulate that the ensuing descriptions of such visual phenomena as the Necker cube, black-and-white bands, etc. *do* involve some sort of mystery. And we both know only too well that the dissected secret will beget another and another and another. The act of recognizing a mystery gets us to ask a 'why' question. The answers, at times, may be nothing but trivial.

Chapter One

Illusion of Vision



"Out of the shadows and imaginings into the truth"
– THE WORDS ON THE GRAVE OF GEORGE GRANT, CANADA'S MOST ORIGINAL THINKER

A. "*This is how everything has happened, I've seen that with my own eyes."*
B. "*I'm not sure enough how everything has really happened, this is only what I've seen."*
– TWO STATEMENTS OF AN EYEWITNESS TO A NASTY BIKE ACCIDENT

Which of one eyewitness's two attempts to correctly phrase her testimony do you think is more successful? Take your time and think it over because much is at stake. In this chapter, I will seek to give you some clues to the answer I favor. One caveat, perhaps, before we start. If you accept the point I would like to make and identify with my answer, the world may lose for you much of its charm. You will come to realize that there is hardly any room for the natural and spontaneous in human life. You, like other people, are programmed and manipulated all through. Worse, your brain, on which alone you depend for the contact with the outer world, deceives you. Your mother's love has been genetically

given. Now Romeo and Juliet probably owe their immortal romance to some idiosyncrasies in their brains neuronal networking (and, posthumously, to Shakespeare's genius). A belief in God, in this evolutionary stage, is more of a hindrance than a help. Much of your behavior is drug-seeking and belongs in the cave in civilization and ethical terms. A new spiral of postmodern struggle for survival has produced new, mass, afflictions 'tailor-made' for less lucky nations and cultural regions. And this is not the end of the disenchantment chain eventually to open by the informed answer to the above unexciting question. *Bon voyage*!

To come back to the question proposed at the very onset. Let us start small. By way of helping you to choose and ground your answer, I undertake to show that it is the human brain that actually decides on *what* we are like and what we see 'out there'. More specifically, the point I am making is that a certain brain region, *not our eyes*, is ultimately responsible for the 'finishing' of the coarse image of a certain outer object initially perceived with the eyes. The brain appears to do so in accordance with a rule of thumb of its own (an algorithm), dispatching afterwards thus 'finished' picture to its other region – a physical correlate of consciousness. In other words, to 'us'. Yet thus groomed image need not necessarily display a one-to-one correspondence with the empirical facts of the world out there – commonly and erroneously referred to as 'objective' reality. Because there is none we can cognize with the help of our necessarily individualized senses (complete with their high-tech extensions) and vantage points. *There is no view from nowhere*, hence there is no knowing matter of fact impartially, i.e., in-itself.

This chapter may justifiably seem to the reader to be dragging on too much. That has been a deliberate decision on my part; in trying to get the reader a sense of the machinery concealed behind visual illusions, I have to lay a groundwork before I make any other moves. This is

going to claim the lion's share of attention and space in this chapter. Just referring my readers to the extensive literature on the many related topics might not have been, I'm afraid, the right avenue to follow. For all that, at this spot I cannot help recommending the lay readers with interest in visual neuroscience at least Francis Crick's remarkably elucidating and insightful *The Astonishing Hypothesis. The Scientific Search for the soul* [1]. Many facts scattered throughout my book have been borrowed from this compelling and inspiring volume. Now there's one technical thing I deem helpful to agree upon at this stage. 'I' ('me' or 'self') shall signify, for the purposes of this essay, a construct of our brains; it is used throughout this text synonymously with "consciousness", the latter's physical correlate being thought as localized in the brain.

It has recently been the trend-du-jour, with children and adults alike, to entertain themselves with so called fun things. These are graphs capable of fooling people by producing an illusion that one can see in them something which is not really there. Some modifications of these are represented in Figures 1-4 contained in this book. The likes of such illusions number literally hundreds (e.g., an impossible staircase or an impossible triangle), and their impressive array is mediated by the Internet web sites at: http://ww.yorku.ca/eye/index.htm and http://www.illusionworks.com/html.

The four plain graphs provided here will suffice, I believe, for an outline grasp of the role our brains perform in seeing. I have adapted these figures from the designs of illusion works found on the web sites cited above.

***

The brain: Not a mirror of truth

" Someone is not as green as he is cabbage-looking".
– FROM THE EU FOLKLORE

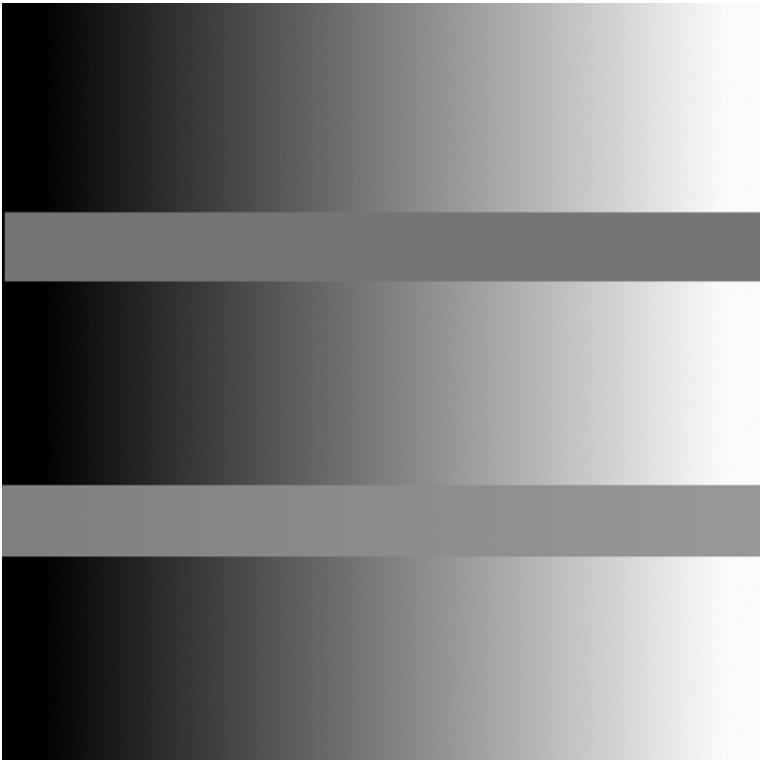


Figure 1

Consider Figure 1 [1]. This simple graph consists of five horizontal bands. If you observe the drawing as a whole, you will probably notice that bands 1, 3, and 5 appear the darkest on the left (0 per cent lightness), getting ever lighter on the right with the lightness reaching 100 per cent at the very extreme. At the same time, horizontal bands 2 and 4 look the darkest on the right, getting

lighter in the direction of the left edge. Now the reader can take two pieces of paper to screen off band 1 as well as bands 3,4 and 5 with each. This done, look at the only band left exposed, which is band 2. In viewing it, the reader will find that its texture is of uniform brightness over its entire width. I know that for sure, for I have executed the graph on the computer myself and can confirm that the entered brightness is indeed equal all over and stands at 54 per cent.

Now cover with the two pieces of paper bands 1,2,3 and 5. The non-occluded band 4 appears darker on the left and gets slightly lighter to the right. It is exactly how I have executed it on the computer: the darkest region on the left (50 per cent) with the band's darkness gradually diminishing in the horizontal direction to fall down to 40 per cent at the right end. This experiment works better if you view the figure at twilight or in dim light. It is noteworthy that the darker and lighter regions on bands 2 and 4 are perceived differently depending on whether you look at them as part of the whole drawing or as separate shapes, i.e., with bands 1, 3 and 5 screened off. Furthermore, yet more fascinating is the fact that you tend to see band 4, when it is viewed as part of the entire graph, as the lightest on the left and the darkest on the right, though its physical brightness is the exact opposite of this illusion.

A conclusion to be drawn from this simple demonstration is equally plain: Our brain deceives us. It just does not report to us truthfully what it perceives. Alternatively, pictures we are offered by the brain bear no one-to-one correspondence with the outward world. On the face of the above, the correct answer to the question asked at the opening of this chapter should obviously be 'B': *I'm not sure enough how everything has really happened, this is only what I've seen.* Very much the same inferences could be drawn from experimenting with most of other illusions, the mentioned Internet web sites included.

Deception for the sake of survival

"Owing to this struggle [for life], variations, however slight and from whatever cause proceeding, if they be in any degree profitable to the individuals of a species, in their infinitely complex relations to other organic beings and to their physical conditions of life, will tend to the preservation of such individuals, and will generally be inherited by the offspring."
– CHARLES DARWIN: THE ORIGIN OF SPECIES

Now our experiment inevitably raises more further questions and adumbrates many topics. How can it come about that on the whole Figure 1 we see the regions of darkness and of lightness on bands 2 and 4 localized differently from their real position? Why does our brain give us inadequate information on the shading of bands 2 and 4? Why does it baffle us?

There is no quick answer to this question. Even if we may have some rough notion of why the brain persists in telling us lies about the outer world, we are still in the dark about the way in which it performs this obvious distortion. What are the contents of our visual awareness and what is its neural stuff? It is plausible to believe that the human brain scans a projection of the object found on the retina of the eye to further process it and, unlike a video camera, to eventually alter it. What needs to be realized is that it is not the case that the image coming from the visual world and falling on the retina will be straightforwardly recorded on either any sort of template or an actual display screen localized inside the brain, and then passed on to our consciousness to view. Rather, the case is that a picture we initially perceive presents in itself a coarsely sorted set of electric and chemical pulses dispatched to the brain from the retina of the eye. Then

this cluster of signals is further handled in the brain according to a definite rule/algorithm yet not discovered. A particular kind of algorithm involved (or the way the image we receive is constructed) as well as a specific modification of the initially obtained sensory percept we will eventually have seen are contingent on both genetically encoded anatomical patterns of connections binding brain neurons (our 'hardware' and the province of 'genes' as units of inheritance) and on temporal patterns of neural activity. These secure the brain's additional, more *ad hoc* tuning-in by means of extrinsic cues provided by previously accumulated cultural experience (our 'software' and the province of 'memes' as units of cultural memory).

In other words, specific patterns of neuronal associations, which have developed in our brains throughout the long evolutionary course, handle impulses they receive from the retina of the eye to further process them and thus arrive at 'images' that are forwarded to our consciousness for 'viewing'. It is exactly these neural bindings that determine what we will or will not eventually see. In evolutionary terms, the outlined system of image formation is involved in the survival and reproduction of species and their individual members in the incessant and ubiquitous struggle for existence. In this light, it would be fairly reasonable to infer that there must have been not as yet any urgent evolutionary 'demand' for a more perfect visual system in humans. In all likelihood, an ideal system, which would secure the one-to-one correspondence between the percept and the external object did not use to be of any survival advantage for the human brain (itself, by the way, a sophisticated product of the hundreds of millions of the evolutionary development, which is in charge of survival and reproduction). I am inclined to agree with the view that it didn't use to be mortally important for the human brain to be capable of discerning whether band 2 is uniformly shaded along its entire length or it is not.

Therefore, the brain in our experiment has accorded band 2 its level of brightness in sticking to the guidelines of some sort of algorithm unfamiliar to us. At that, whether the result corresponds with the evidence as found in physically measured reality or not is for the moment of no point for the brain. Obviously, this may not remain the case if the pressures of survival and selection have changed, e.g., when one is entrusted with sighting a missile in precision bombing. (A very hot topic at the moment if you recall the notorious NATO 'collateral damage' and their recognized 'mistakes' leaving human casualties during the recent air strikes at Yugoslavia or Irak.).

***

Brain the Liar

"Will truth out?"
– A PARAPHRASE OF THE OLD ADAGE

Let's, finally, have a look at Figure 1 as a whole. It is noteworthy that, again, we can see what we could see at the very beginning of the experiment. More specifically, bands 1, 3, and 5 look the darkest on the left, while getting lighter on the right. Now bands 2 and 4 look darker on the right side than on the left one. The observed phenomena will get yet more obvious if you have viewed the bands at twilight. The most striking thing about this effect is that we do know for sure that band 2 is evenly shaded along its length, as the brightness of band 4 does increase in the left-right direction. How come that our brain stubbornly ignores what we already know for sure, viz., the physical truth about the brightness of different bands in Figure 1? How can it be that the brain is trying to fool us into believing in something of which we are

convinced is plain wrong? How come that the brain won't be instructed by the information provided by the visual scene of 'what is really out there'?! Why is the brain repeatedly tricked into making an incorrect neural binding?

Try to look at the same drawing fairly steadily for some while, making your brain (or consciousness, if you wish) revise the percept of the brightness in the bands so that the result conform with the physical data of the real world. But the brain won't do so! **How is it, then, that our brain has again forged a perception that conflicts with the hard facts of life? How come, lastly, that we are unable to get our brains to perform the correction required and, consequently, substitute the 'truth' in Figure 1 for its mere illusion?**

One of the more plausible explanations is that the brain region involved in the production of the final picture acts autonomously, consulting not its modification of the initial percept with its another region in charge of consciousness formation, visual awareness included. Put otherwise, one brain region would work out some kind of picture which is afterwards, without any 'cross-talk' between the cited brain regions, sent over to our consciousness to view and 'unconditionally' accept. This is as much as to say that you, your consciousness, have no opportunity to make any amendments to the image fabricated by your own brain.

The awareness that the brain stubbornly rejects to get informed by the natures of real objects and events, and that it has no way to make any corrections to their 'distorted' projections – via consulting consciousness on the matter – is absolutely essential for the grasp of this book's message. Such awareness, if reached, may make all the difference for the appreciation of at least one aspect in the brain's tricky behavior. What is involved here is, in fact, a glimpse into the machinery underpinning the creation of illusory truths as well as of beliefs in the preternatural, in the ultimate immateriality

of human consciousness, and, lastly, in free will. I commit myself to the view that all of these are tightly controlled by our brain's hardware and software levers. Their algorithmic rules do mediate, for better or worse, between the brain and real order.

***

Casting the die

"To be or not to be?"
– SHAKESPEARE: HAMLET

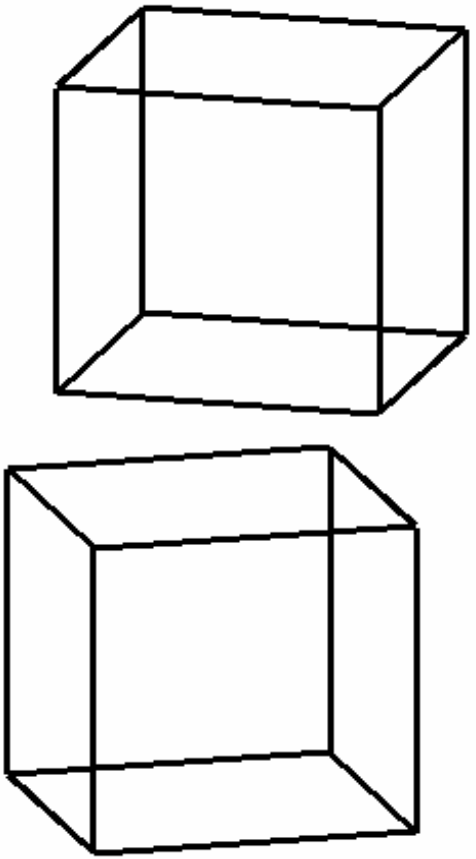


Figure 2

Evidence indicates that not merely Dutch princes, but people at large are prone to hesitate and ask Hamletian questions. Isn't it the brain that prompts us this 'casting the die' policy [24]? Does the brain ever resort to casting the die? Where it comes to the Necker cube/die, it definitely does. Judge for yourself by staring at Figure 2. The graph contains two so called Necker cubes. Let's consider the upper one. The drawing consists of twelve straight lines on the surface of the paper (a two-dimensional, 2D space). Eight of these make up two equal squares whose angles are connected by four straight lines. Following this design, one could make such cube from wood or metal. If we made such a cube from glass and painted its ribs black, we could see twelve straight black lines in a 3D space, similar to viewing the twelve black lines in a 2D space drawn in the upper part of Figure 2. The stunning thing about this drawing is that in the upper part of Figure 2 we do see a cube in a 3D space, not just two squares in a 2D space joined together by 4 straight lines. The same goes for the lower part of the drawing. Why does our brain choose to resort to such sleight-of-hand tricks? Why does it feed us a lie about the empirical reality of the 2D shapes, wanting us to see, in their stead, a 3D illusion?

The hitherto evolutionary development has left many animals and humankind with a pair of eyes to see the world out there multi-dimensionally. Viewing the world with one eye seriously impairs this ability. Paradoxically, the above seems not to be the case when we observe the twelve connected lines on the surface of the paper, referred to as the Necker cube. Whether you look at them with your right or with your left eye, or with your two eyes simultaneously, you continue to see the lines as the outline of 3-D cubes. It looks like the brain has decided to make these twelve lines be perceived like that 'at any cost'. How then can we account for the fact that our brains would add one more dimension to a surface representation, ascribing thus three-dimensionality to a

2D flat surface? And all this despite we are dead sure that the figure has been drawn on the surface of the paper, i.e., as a two-dimensional one? Further analyses of the phenomenon at hand would lead us to largely the same conclusions as in the case of the bands represented in Figure 1. For the better or for the worse, our brains deceive us by refusing to reproduce true copies of images coming into the eyes from the world outside the head.

There is another mystery shrouding Figure 2. In interpreting the twelve straight lines on the surface of the paper as a 3D cube, the brain has to adjust the perception of depth by 'moving' one side of the cube ahead and pushing another to the background. To attain this, the brain faces these two options: either to move ahead the left square to form the side of the 3D cube or the right one. It is quite remarkable that as I look at the upper square in Figure 2, I can see that the left square as the side of the cube is in the foreground while the right one in the background. Yet more astonishing, if you continue to closely look at Figure 2, you will have noticed the cube has inverted (as if it were viewed from another angle), so that its former back side (the right square) is now perceived as being in the foreground, while the left square has receded to the background. After some while, if you continue staring, the upper cube will have returned to the original position. The readers can try that themselves, and many are most likely to have found that instead of the twenty-four straight lines drawn on the flat surface of the paper (a 2D space) they can see the two three-dimensional cubes. At that, the upper cube would invert, and the lower one, at some moments in time, would follow suit. The reader will have an opportunity to literally perceive the brain casting the Necker die/cube in order to opt for the best plausible percept. You can normally catch your own brain red-handed in how it is jogging the die up and down.

I will, perhaps, venture one fairly tenable elucidation concerning the upper cube. Responsible for the handling

of messages coming from the retina of the eye, the brain firstly interprets the input of the received signals just as twelve lines. Yet it does not passively record the incoming information. On receiving the initial percept, the brain's certain region starts assessing and identifying the data received. In so doing, it relies on the algorithmic in-built assumptions developed and maintained by its own hardware and software. On having pitted the twelve lines against its earlier amassed experience, the brain would assign them a cubic shape as the more plausible of all conceivable interpretations. Furthermore, past experience has prompted the brain that only one side in a cube can be in the front, so the brain thus instructed decides to position in this place the square it believes, on the face of the previous experience, to be the right one. Consequently, what we do see is a 3D cube. In addition to this, the brain is also aware of two plausible spatial locations of a cubic shape. After some while, thus, the brain will start, for yet an unidentified reason, to consider the second conceivable position of the cube as the more plausible interpretation. So therefore, it will overturn the cube, and we can, consequently, observe the cube have inverted. This is the way in which the brain would cast the die each time it is uncertain which of the two positions (equally defensible interpretations) is the right one.

In all likelihood, seeing a cube instead of lines and its subsequent turning over are contingent on our visual experience of cubic shapes, i.e., on the tuning-in of the brain software as well as on the genetic connections of neurons. These are equipped with their own algorithm applied to the assessment of electrical and chemical pulses dispatched to the brain from the retina of the eye. It is interesting to note that I have succeeded, with just little effort, in changing even the frequency of the cube's rearrangements. There are more other 2D drawings interpretable by the brain as three-dimensional representations it would at times throw over in space.

The reader will find some of these on the earlier cited web sites.

***

Mozarts and Salieris

"The colors of the peacock and the blazing reds of the setting sun are but subjective qualities produced in the perceiver by a special, but individualized, nervous system that responds selectively to light waves, themselves colorless, of varying frequency. In itself, the sun is a colorless froth of energy, and the real world as described by physics is merely a world of colorless, soundless, odorless matter. Everybody makes a better or worse job of it, depending on her endowments. In this perspective, I'd like to conclude my lecture then by thanking Mozart for his unparalleled contribution to the world of sound."
– FROM A GUEST LECTURE ON VIRTUAL REALITIES

Have one more look at Figure 2. Stop the time over which you can see the upper cube in its first of the two plausible positions, then do the same for the second one. Repeat this six times, making note of the time taken by the overturns proper. First I observed the cube myself and arrived at the following: initially, I could see a cube with its left side in the front; seven seconds later the cube started to turn over, and the change was completed within the ninth second. Next overturn occurred within the thirteenth, fifteenth, and seventeenth seconds. The overturn times reported by my ten-year old son were as follows: he saw the left side of the cube in the front for not even one second, with the overturns of the cube occurring within the seventh, eleventh, twelfth, seventeenth, twenty-third, and twenty-fifth seconds. My colleague's

results were these: zero seconds of observing the cube with the left side in the foreground, the turns recorded as taking place within the fifth, twenty-sixth, thirty-eighth, forty-third, forty-ninth, and fifty-first seconds.

It may be inferred from the above measurements that my brain must be casting the die in a slightly different way from my neighbor's brain. Consequently, it is fairly safe to venture a suggestion that people's brain hardware (neuronal connections) and software (tuning-in of a certain function with reliance on previous cultural experience) differ, making some of us Mozarts and others Salieris. Put otherwise, the associations of neurons in my brain and their further tuning-in are not identical to these in my neighbor's brain. Their divergences seem to account for individualized options made by our brains. The above explains why people are not equal in interest and endowment.

We have journeyed far enough together so far to have acquired an awareness that people's brain hardware and software are very individual; also, that one brain region sends out to our consciousness the outcome of its own (conceptualistic) interpretation of sensation rather than the adequate reflection of the hard data found in the outer world. This double-pronged awareness constitutes another major clue to the grasp of illusion production mechanism. More specifically, such awareness could be crucial in unveiling various types of illusions, such as, for instance, illusions of truth, of belief, of the soul, and of our free will (which actually appears to have so little to do with the freedom of volitional choices, but I shall pick up this at a later stage in this essay).

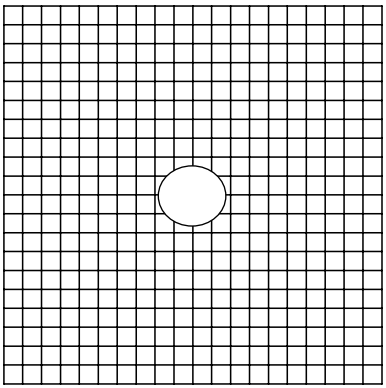
***

The paradoxes of appearance

"The brain's ways are flatly incomprehensible"
– A SMALL TALK OVER COFFEE AT A BRAIN CONFERENCE

Optical illusions also allow us to explore further properties of our brains. In particular, the human brain can successfully guess (fill in) the parts of the picture we actually cannot, for some kind of reason, observe with our eyes. What actually happens in the brain to make us see? Those who used to be exposed to biology at some stage of their education may remember that the retina of the eye is connected to the brain by a nerve. The little area on the retina whence this nerve leaves is, for room scarcity, devoid of photoreceptors whose function is to respond to light particles coming into the eye. This place is significantly referred to as the blind spot. The name suggests that we are actually blind there, and the brain cannot identify the part of the visual scene left 'unaccepted' by the area missing photoreceptors. Like primary children, you can make certain of this phenomena using Figure 3.

It consists of an X drawn on the right, while on the left side of the drawing there is a picture with a white little circle in the middle. If you close or cover one eye while looking with another at X on the right side of Figure 3, you will be still able to see the picture on the left with the white circle in its center. Now move the book with the picture backwards away from the eye. At a certain point, you will recognize that the white circle on the left has vanished, leaving the perceived picture whole, i.e., without any patch or hole in the center. This signals that the symbolic image of the white circle has fallen on the blind spot devoid of photoreceptors. One striking feature of it is, though, that, instead of the



X

Figure 3

missing white circle, you can 'see' some picture that actually is not there. Yet it needs to be underlined that, instead of the vanished white circle, you do not see a black one (as you could have expected on the assumption that the brain has received no signal from the 'blind' area on the retina because the latter has failed to record the initial visual signal coming from the white circle).

The above suggests that a certain brain region, in recognizing a set of electrical and chemical signals coming from the retina of the eye, would find out that it has altogether no information about a definite part of the percept. The brain, contrary to expectations, does not seem to worry about the discovered deficiency, as it is equipped with the hardware and software responsible for conjecturing and conjuring up the missing parts of the

visual field and for adding its thus 'restored' fragments to the final product. This now complete picture is subsequently forwarded to our consciousness. You can try this by yourself. Close one eye while looking all around with the other. What you will see is a continuous picture, instead of the dark circle which is actually the part of the visual world projected on the blind spot. We, or our consciousness, are altogether unaware of the fact that a certain part of the final percept has been generated (filled in) by the brain. In this manner the human brain can guess and attach, several times in a second, certain missing fragments it has failed to really see. This translates into nearly half-million image-conjuring operations per day. A fairly enviable performance, isn't it? The brains of people involved in gathering decorative roots and plants off in the fields and in the woods could share with us quite a couple of amazing things about the bizarre forms of their finds and how these may induce, and impose, all too familiar images and shapes on the gatherer.

***

Yet more distorted reality

"In saying that beauty is in the eye of the beholder one just explicates the tacitly shared suspicion that the data of physics have a great degree of privacy and tend to be grossly misrepresented by individual recipients. It is in this context that we would say 'love is blind'.
When in love, you do see what others fail to."
– THOUGHTS AT THE BRATISLAVA NATIONAL PICTURE GALLERY

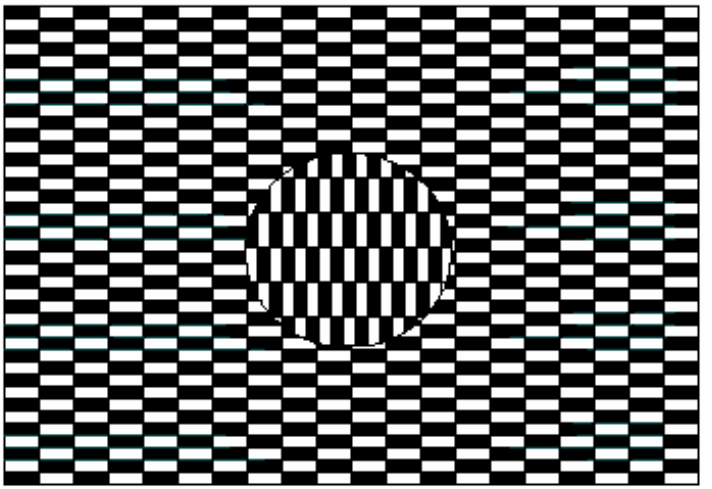


Figure 4

The instances are not rare when not only our brains would make for the missing part of the visual field, but they would even attach certain unreported properties to the initial percept obtained from the retina and then send the 'enriched' image over to consciousness. Consider

Figure 4 that shows my adaptation of the popular Ouchi Apparent Motion Illusion.

Move your eyes around the image, and you will probably have noticed that the centrally placed circular section with a vertical pattern appears to move relative to the fixed horizontal pattern in the surround. In assessing and processing the picture, part of the brain arrives at the conclusion that the centrally placed circle is moving. In other words, the brain has assigned a motion property to the pattern drawn on the flat surface of the paper and then submitted as its 'animated' version to consciousness. Had we not known for sure that what was really drawn on the paper were just short stripes unable to move, we could have easily believed the appearance, giving thus our treacherous brain another chance of deluding us. Indeed, what you see is not always what you perceive.

***

The brain in torment

"Our brains ache, in the merciless iced east winds that knive us…"
– WILFRED OWEN: EXPOSURE

It is widely assumed that part of the brain, aided by some sort of algorithms we know yet nothing of, is responsible for shaping initial percepts subsequently transmitted to our consciousness. Today, though, the brain has to process electrochemical impulses coming from multiple entities in the outward world for which there are no evolutionary tested and inherited rules. Let me venture an assumption that the brain must be suffering any time it is exposed to such recent images and expected to handle the unfamiliar input all by itself, i.e., unaided by some neural bindings established during the earlier

evolutionary stages. We would typically learn about the brain's difficulties of this sort by having headaches. For myself, I would suffer an invariable headache after being exposed for more than three minutes to most video clips which accompany popular songs or to a wildly blinking pattern of disco lights. My response to the sound of asphalt being ripped open by a pneumatic jackhammer is equally painful.

What is involved here is this. The coherence of images in screened films is secured by showing sixteen stills per second, which is faster than the speed at which we can process the image perceived. In a slower screening, from five to twelve stills per second, the brain experiences difficulties in the correct interpretation of what it is being exposed to. In humans, the difficulties show in headaches. It might well be the case that the absence of appropriate sound and optic algorithms have been contributing factors to recently common neuroses in people.

***

You cannot trust your brain

"The lovely treachery of the senses!"
– A VIRTUAL REALITY PROGRAMMER'S DEFINITION OF LIFE

Most of us have been repeatedly deceived by other senses as well. We have heard, for example, something of which we later learnt that it did not correspond to reality. In processing incomplete sonic electrochemical information (when someone speaks too softly or inarticulately), the brain may automatically guess and invent so much information that what it then submits to consciousness can sometimes be an entirely different word or even a

whole sentence. Equally, any of you can recall smelling, touching or tasting something our brain has interpreted inadequately, i.e., in discord with what was out there.

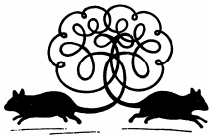
Such faulty perceptual experiences make me agree with the authors who assume the formation of sensory illusions by the appropriate region of our brains to rely on roughly the same mechanism like that involved in the creation of illusions of vision. When we hear, smell, touch or taste something, electrical and chemical impulses dispatched from sensory organs to the brain are handled according to the algorithmic rules. These may rest on coarsely the same foundations as the algorithms involved in processing visual signals. To repeat, a certain brain region interprets these signals and forwards them to our consciousness, or to us. The input finally submitted to 'us' possesses very much the same characteristics in terms of its verity to reality as the final visual percepts examined in this text several paragraphs back and referred to as optical illusions.

So far so good. To sum up, one part of our brain, which processes signals coming from the sensory organs and submits these to its another part, or consciousness, may occasionally a) misinform us and tell us untruth about the world beyond our minds; b) ignore physical data coming from the perceived reality; c) in cases where the received signals are ambiguous or open to more than one interpretation, take tentative decisions and cast the die d) provided that the incoming information is not complete, fill it in or do the guesswork in order to arrive at an 'adequate' interpretation; e) ascribe properties to the percept in terms of the real-world objects. The contents of such interpreted images are brain constructs, therefore they are conditioned on the brain hardware and software found in individual people.

***

Chapter Two

Illusion of Truth



Each mind has some sort of truth of its own.
– A PARTICIPANT AT THE CONFERENCE OF INDEPENDENT MINDS

'Most people look at the illusory veils and are convinced they see the truth, but actually they are only deluding themselves.'
– MIHALY CSIKSZENTMIHALYI: THE EVOLVING SELF

In this chapter, I shall concern myself with another illusory phenomenon, specifically, the mechanism of creating illusions of truth. This sort of illusions fabricated by our brains are, similar to visual illusions, all too common. Even it wouldn't be much of an exaggeration to insist that illusions of truth have ever been integral part of human life. In books and on web sites alike, one will find multiple examples of these truth offenders. They are also scattered abundantly across historical and sacred books. It goes without saying they have come to be a staple diet of contemporary mass communication media. It is noteworthy that as pastime and entertainment, illusions of truth are far less popular than all sorts of visual deceptions, the latter being also successfully

exploited as profitable business. Nor will you find illusion of truth web sites, although strong historical evidence does exist in support of the claim that what people used to take for irrefutable truth would all too often prove merely an illusion thereof. Illusion, as we all know, may be very costly.

In the early days, let us say, millions of years ago, people used to get the knowledge of the surrounding world first-hand, by trial and error. When our pre-historic forebear wanted to make sure whether the fire stone was still hot, she just stretched out her arm and touched it. The resulted sensation reported the experimenter the truth about the stone's temperature. When curious about the taste of yet unfamiliar berries, the early people simply sampled some of these. Superior physical strength and prowess of the male within one tribe was commonly established by a fight which would leave the weaker one a loser. As the time went by, however, our ancestors, already equipped with verbal forms of communication, could and would derive the knowledge of the outside world indirectly. Such second-hand knowledge reported by others was particularly the case where it came to the world beyond their immediate milieu. Furthermore, such mediated information would increasingly involve reports on abstract entities and intangible phenomena, which defied experimental verification. On this account, the brain of our early predecessor had just to assign truth value to her more abstruse finds. Thus tagged information would enable one tribe to deduce that another one, which had recently occupied some distant valley, could be dangerous for their survival. What was remarkable about the whole thing was that the menaced tribe might have never met the members of the incriminated and allegedly menacing out-group. They might have just heard of these reputedly ill-meaning people. In very much the same roundabout way our early forefathers adopted the truth about a God. They had

never seen that elusive entity, but the truth of its existence and assistance in, for example, successful chasing big animals, used to be regularly enforced by food sacrifices made to the relevant, hence revered, deity.

It so happened that in the course of their later development our predecessors were getting ever more knowledge of the outside world through mediation. With such information available, they would assess people who inhabited more or less far off places – and whom they had never really met – as kind-hearted or ill-natured, or still worse, as bloodthirsty and murderous. If so, our ancestors might further infer, these aggressive people did not hesitate to kill the innocent, to drink the blood of infants and, sure enough, they bowed to some alien – hence false – gods. Equipped with such mediated information, early people found no difficulty in believing that local lords, in contrast, were just and fair, and that their right to rule others was natural, not just usurped. They believed that humility and obedience would ultimately earn them reward. Again, they sincerely believed that any one who revered a God who was not theirs – and whom they themselves had never spied or heard – was of necessity a noxious and inferior malefactor. Needless to say that most knowledge we derive nowadays about the truth of the world beyond our minds is mediated. Our minds are mercilessly bombarded by second-hand and necessarily biased information coming from the media and supplying, thus, pabulum for the brain as an organ responsible for forging a reliable and truthful account of the outer world. To meet this challenging assignment, the brain has to sieve huge influxes (sometimes the word 'flushes' seems more accurate) of data coming from out there. Ample evidence confirms, though, that the human brain can construct many 'truthful' accounts of the one physical world outside our heads. This 'worldbuilding' capacity of the human brain is harnessed for propagandistic and advertising purposes.

***

Too many truths in the marketplace

"Most human groups believe that they are chosen people... and that their ways of life are better than anyone else's… One unfortunate consequence of this attitude is that, believing too strongly in the reality of our culture's world, we miss the large reality behind it. Many people don't object to toxic waste as long as it is not dumped in their neighborhood."
– MIHALY CZIKSZENTMIHALYI: THE EVOLVING SELF

How do we know that something is true or false? How does the brain discern the truth? What kind of mechanism allows the brain to interpret the information received in the shape of electrical and chemical impulses it is constantly exposed to? Is it the case that our brains are endowed with appropriate algorithmic rules for discriminating between truth and untruth, alongside certain rules for handling, say, optical information? Is it the case that the brain produces illusions of truth like it does illusions of vision? My answer is in the positive, and this is what I shall be seeking to show in this essay. One of this book's claims is that truths we tend to believe in are largely the dictates of our brains' hardware and software equipment, as it were. So, individual truths may diverse considerably from the 'objective' (or hard) facts of the real world they have been traditionally expected to mirror.

My assumption is that the region of the brain involved in the production of a true account of the outer world (or just of an illusion of the matter-of-factual truth) processes electrical and chemical impulses generated by our senses and sent out without any further consultation (or with just pretty little of this) to our consciousness, as described earlier in this essay in the context of illusion of

truth production. It would not be entirely unreasonable to suggest that an illusion of truth might be part of our consciousness in its own right. Proceeding from the facts I am going to describe below, I maintain that a certain region of the brain may not in some cases (or even most cases) tell us the truth about the world beyond our minds. What is more, the brain may deceive us like that despite the availability of persuasive and unambiguous physical data to the contrary. In addition, there is extensive evidence to the fact that when the information incoming from our senses to the brain is deficient, the brain initiates programs capable of completing the missing data through filling in the image and interpreting the wanting sensory input according to its sovereign regulations. The outcome is nothing short of an illusion of truth. Similar to mechanisms involved in conjuring optical illusions, the interpretation of signals informing us about the real state of things going on all around is conditioned on the particular hardware and software of individual people. The same physical data, thus, may be treated diversely, i.e., like a whole gamut of truths (up to untruth) about the outer world. The contents and degree of many possible deviations depend on individual genetically inherited brain hardware and on experientially tuned in software. It is up to our brains to determine how the incoming data will be processed, and that is contingent on the types of algorithms available in the individual brain for meeting the task. These rules are, most probably, dramatically distinct across cultures and individuals pursuing their identities within their respective cultures (or perhaps cross-culturally). This is as much as to claim that depending on the individual brain's hardware and software equipment, a person can become faithful or agnostic; can display leftist or rightist political behavior during election; will love Anna rather than Isabel or, finally, may prefer potato dishes to a cabbage diet.

Many of you must have had the same sort of experience when, in following a talk show involving a

politician, you perceived her words as pure bluff verging on outright lies, while your colleague sitting next to you (or even a member of your close family) was dead sure the same politician, whom she normally worshipped into the bargain, was telling truths nobody could seriously challenge. The upshot: my brain's algorithm made me interpret the same cluster of signals antithetically to the version controlled by the brain algorithm of my nearby sitting co-worker. Let me reinforce this assertion by the following hypothetical consideration. Imagine the same broadcast release followed and analyzed by two computers. Should the two machines have employed for the task identical programs, they would certainly have arrived at the identical conclusions regarding the truthfulness or falsehood of the politician's message. Contrariwise, should the two machines have monitored the political talk show by recourse to distinct programs, their conclusions as to the reliability of the politician's words in terms of the truth/untruth binary opposition could have been widely different.

Try to recall the historiography of the most commonly known wars and the popular discourse on them. You just cannot fail to encounter at least two differing 'truthful' accounts of each. Those on the one side of the front line were invariably convinced that their cause was the righteous one, but the people risking their lives on the opposite side did believe in their twist of truth no less vehemently. As the consequence of pursuing their diverse truths about the same contentious issue (and in the name of these beliefs), they would oftentimes kill one another. Very much in the same vein, present-time political and election campaigns will break people into groups by their political affiliations and preferences. In other words, by types of political, illusions fixed by their individual brains.

So, people may have lots of illusions of truth constructed against the background of (or inspired by) one physical reality we all of us are exposed to. People's

brains appear to be bombarded by roughly identical second-hand (and all too often deliberately biased) information. Alternatively, the world is represented by ideas, schematically. This accounts for several distinct truths that may emerge and be circulated in one information environment. In plain words, each of us may have one's own illusion of truth individually colored by her unique brain hardware and software. It is this individual twist to what ought ideally be some kind of commonly shared truth that makes individuals take to the streets in order to join protest demonstrations and marches, and quarrel with their spouses or co-workers. Again, this individually colored, hence illusory, vision of the things around there may feed life-long aversions and affections alike. Figuratively speaking, we seem to be dancing to the tune played by our brains' algorithms. All too often, though, we do so unawares. Many people continue to believe that the brain/mind is just a receptacle which does not alter or transform what flows into it.

***

Truths at war

"People do not inhabit the 'real' world (if there is such a thing) but the idiosyncratic world of their own perceptions, values, prejudices and partialities."
– HORACE BENNET: COMMUNICATION SKILLS

One need not employ any sophisticated arguments to demonstrate the accuracy of the above claim. There is supposedly one 'physical' truth about the real world we live in. This entails that all people sharing one information milieu should hold common views on its entities, processes and values. Put otherwise, they should share one idea of truth relative to thus shared immediate

environment. Yet the feedback coming from various individuals and groupings testifies to the fact that the expected sharing of belief in one truth is not the case. It looks like singular groups sharing one information habitat have been fed by their respective brains biased, preconceived accounts of the one reality they live in. Consider this notorious example borrowed from school environment. In each class you cannot fail to recognize at least three distinct opinion-groups as to one and the same teacher the pupils have had equal opportunities to be exposed to and assess first-hand. Some will have said that the teacher is smart and pedagogically apt, others the reverse of that, while still others may assess the teacher's intelligence and instructional aptitude as being somewhere in-between.

While watching political roundtable discussions, I would catch myself thinking that at least two accounts of one and the same thing involved are equally defensible. One of the two plausible truths is held and argued for by clustering on the right side of the discussion table, another by those grouped on the left. It is striking that both groups have had roughly equal access to roughly the same background information on the essentials of the issue being discussed. Moreover, they would oftentimes even exchange in the course of the discussion new facts, casting thus additional light on the contentious issue. This notwithstanding, at the close of the debate there would be little, if any, progress made in terms of bringing their individually colored truths any closer to each other.

Contemporary parliamentary process and procedure give further credit to the existence of many equally plausible truths about the one real world we inhabit. Very conspicuously, MPs in national parliaments are usually supposed to occupy left-wing or right-wing seats. Such arrangement facilitates a straightforward identification of the hue of illusory truths produced by the parliamentarians' individual brain hardware and software. Notice that these people are products of the

same information environment and they enjoy exclusive access to the most up-to-date information on any subject they might get interested in. Also entitled to the expert services of their official advisors, they seem to have in hand all they need in order to create a very informed opinion on the subject of their concern. And yet, and yet, and yet. On most issues, parliaments tend, when it comes to voting, get divided into those 'for' and 'against' one thing. The anterior debate would often involve pretty strong language, when the leftists may refer to the information employed in the argumentation of their opponents as 'inadequate, poor, blatantly stupid, arrogant, false, untenable, and shamelessly deceiving'. Be in no fault to believe that similar accusations have ever been one-way. The same starkly adversarial pattern applies to the views upheld by opposed groups of constituents, pub dance-girls, members of religious sects as well as street gangs.

In an opening part of this work we looked at the abortion debate. Another notoriously known example in support of the above claim is sponsored by Northern Ireland and what its Protestant community regards to be an auspicious way for their country to follow as against the views on its future optimal development promoted by the members of the country's Catholic circles. For both groups Northern Ireland is their home. The two visions of their common house's future are so irreconcilably distinct that the 'exchange of views' would oftentimes assume the form of reciprocal violent assaults. These have already left the nation with thousands of deaths. Haven't the two communities had equal access to information available on the past and present of their nation? Aren't the proponents of both blueprints for Northern Ireland free to opt for any cluster of facts they could embrace as truthful and vice versa? More examples of such divergent accounts of the same phenomenon generated by distinct individual brain hardware and software are to be encountered in the Israeli-Palestinian controversies, in India, at your

workplace, at a pub. They challenge, accuse and ridicule each other in the form of graffiti art adorning the walls of contemporary cities and sparing no human agglomeration. To sum up, what we have around is a bazaar of multiple truths, rather than the ironclad certainties of the 'common' real world.

The multiple truths embarrassment stands out very graphically when one turns to the sensitive issues of religious affiliations and beliefs. In my surroundings there are religious people who identify themselves in confessional terms as both Christians and Catholics, and who believe in God and in the truth of the Word of the Bible. Others, in turn, make no secret of the fact they believe neither in God nor in the claimed truth of the biblical account of the world. Furthermore, it is pretty safe to assume that the two groups have been exposed to roughly equal opportunities in terms of access to and the amount of information concerned. Everyone is free to choose from the menu on offer the facts and data she regards as adequately capturing the truth about God and the Bible or, conversely, refuting any such claims altogether. This is how people coming from the same environment may turn into either religious devotees or into nonbelievers in religious terms, who sometimes seriously challenge the truth and faith pursued by 'good Christians'. What decides which part of the information available will have been adopted or dismissed by individual seekers? This enigmatic something must be the brain with its distinct and distinctive mental furniture. The reality that someone can kill and even risk his or her own life in defending their partial truth as superior to other plausible truths about the same thing demonstrates fairly straight forwardly that our consciousness is not able to represent the world around 'as it is'. What it does serve us instead is a mere illusion of truth.

Further examples of this phenomenon are legion. They range from the truths current in political circles

through to their infrequently perverse and pervasive variations found among the military and in the ranks of religious fundamentalists of the world's various denominations. They peep out of neatly packaged and differently tinted and lacquered ideological doctrines. The latter's architects and followers tend to be invariably convinced that their interpretation (actually, their biased assessment of the 'objective' truth) is the only right one and, of course, perfectly impartial. In reality, though, all these innocent souls have fallen victim to tenacious illusions of truth issued by the hardware and software of their 'customized' brains.

In giving preference to one television channel over another as well as in favoring this account rather than that one, we, again, only slavishly obey the rules imposed upon us by our own brains' hardware and software, which inevitably exact this rather than another feedback on our part. One section of the human brain in charge of illusion creation will see to it that you prefer such and such television channel or radio station. It will decide for you which priests or politicians tell you the truth and only the truth, and which feed appalling lies or demagogy to you. In short, this brain section will decide for you which portion of the incoming information ought be accepted approvingly (because it fits in with the illusion of truth constructed by your brain's hardware and software), i.e., as true, and which one ought be pigeonholed as false (just because it happens to be at odds with the illusion of truth generated by your brain).

Opinion polls give further credit to the above reiterated insistence. Almost a textbook example was provided by two Slovak television stations campaigning for rival political groupings in the 1998 national elections. Not entirely unexpectedly, the returns of the opinion polls as gathered and released by the two mass communication institutions displayed considerable divergences. Both embattled camps exchanged accusations of infidelity to hard facts and figures, and of violation of the Journalist

Code. What was the response of the audience, one is justified to ask? Well, 45 per cent of the viewers relied on the information released by one television station, whereas the remainder of about 55 per cent turned to its rival, which allegedly vouchsafed the impartiality of information. The national audience used their right to choose, forking into those who firmly believed that 'their' television channel is the paragon of unbiased public service busy updating their audience on the latest truth about election developments, on the one hand, and those who had opted for the truth about the run of the election campaign mediated by the second, commercial, TV channel. Despite the many catchy and venerable 'isms' involved in the cited bifurcation (including 'pluralism', 'individualism', and 'liberalism'), the embarrassing fact about the whole thing remains that neither of the two 'truths' seems to have reflected adequately the 'stubborn' facts of the real world outside the headquarters of the two TV facilities. Continuing the bifurcation metaphor, one is reasonably safe to argue that any audience, however sophisticated and discriminating, is doomed to be n-furcated with regard to their truth preferences in conformity with the hardware and software of their individual brains and the latter's illusion-filtering algorithms.

I was privileged to watch the manifestations of the brain's hardware and software diversification across different people in my chemistry classes with university undergraduates. When given a task to calculate the concentration of the solution obtained after having weighed off the substances involved and having mixed them, the students exhibited multiple approaches to meeting the task. For example, those who failed to recall the textbook formula, were doing the computations in their own, home-spun, way, and most of them managed to arrive at correct final results. And notice, each of the students preferred her own way of coping with the

problem, and they found the methods employed by their course-mates either awkward or needlessly intricate.

The fooled brain and its manipulated holders

"Make'em laugh, cry, faint dead away, and want more of it."
– A PARAPHRASED OLD HOLLYWOOD FORMULA

Any one must have experienced something that gives credit to the above statement. Cinema-goers could recall many and instance when the screening of a well-done soap would bring tears to spectators' eyes and make them fight these back to eventually cry over what they see on the screen. This 'what' is merely sounds and moving pictures, interpreted by the spectators' treacherous brains as something happening in earnest. Deceived and appropriately moved by the 'seen' scene, the spectators would display the whole gamut of sympathizing behavior manifest in nail-biting, gasping or shrieking. In viewing horror films, spectators tend to experience, in different degrees, intense fear and anxiety. Typically, they would enthusiastically support benevolent protagonists when those are shown to be carrying on a decisive one-to-one combat. They would eagerly hope for a victory of their favorites over someone 'unworthy' and 'wicked'. If their idol loses, spectators could be deeply upset by her failure.

It might be futile to bring oneself to an awareness that the above indicated manifestations of our psychic states (tears, fear, anxiety, joy or grief) are invariably triggered by our brains. These emotions and their manifestations are not (or if so, then just partially) controlled by our will. It is our brains that would have us cry, laugh, fear or grieve. The human brain would do so on having assessed electrical and chemical impulses coming out from the sensory organs and on having

arrived at a conclusion (an illusion of truth) that the optimal response for the moment is, for example, to have fear because you are menaced. Such fearful emotions are typically attended by increased heart beat, heightened blood pressure, damp hands, and dry mouth. These changes to our physiological functions are wrought by the vegetative nervous system, which is beyond the control of our will. It is the brain's preserve where it rules supreme. The brain's commands that make us cry or rejoice are stimulated by the illusory pictures that are its own products. In plain words, when you are in the movie, your brain assesses the incoming optical and sonic signals as if they were stimuli send out from the real world. The brain simply mistakes the screened film for reality. We, in turn, fall pray to its fallacy.

How come that our brains are fooled (or in part fooled) by what is no more than moving pictures projected onto the screen? Curiously enough, the brain stubbornly refuses to discriminate between the film about some portion of reality and reality itself, despite spectators all do know that movies are just life situations acted out by actors and actresses. Moreover, many episodes are as often as not shot in specially designed studios. Everybody knows that the protagonist we could see on the screen did not really die, because his death had just been a conventional game. What makes such huge and apparent deception possible? There seems to be one tenable answer: programmed to create illusions of truth, the brain won't let facts of the real world dissuade him from what it wants us to believe.

Dreams provide one more example of this stunning phenomenon. Almost all of us have at least once had a daunting dream making us feel scared and anxious and waking us violently up. Sweating all over, we would feel our hearts wildly thumping in our chest. Erotic dreams culminating in sexual excitement and accelerated heart beat fall under the same category. By way of tentative explanation we may assume that the above is due to the

activation of some neurons associated with memory which, when we are asleep, would start issuing electrical and chemical signals. The brain tries to process these the best it can with the help of its available hardware and software. The outcome of such interpretation might be some sort of event we see in the dream, which gets us frightened or, in the case of erotic dreams, causes sexual excitement. What is remarkably noteworthy about this phenomenon, is that the brain responds to these 'fake' events as if they were real. To reiterate, the brain in this case has ignored and dismissed the physical truth about your actual state of being safe in your bed, snug as a bug in a rug.

So then, the fear, anxiety, and sexual excitement as experienced in the cases cited previously have been internally manufactured by the brain, and, let's not forget it, we tend to live through such experiences largely unaware and despite ourselves. It is the brain alone that has forced us to have experienced the cited feelings – making us sweat all over, fear or get sexually excited. The perplexing thing about this fact is that the brain has made us feel all the cited emotional gamut on having analyzed the electrical and chemical impulses which, in the case of dreaming, have not reflected your or my interaction with the world outside our heads. What happened indeed was a matter of the brain having manufactured a certain illusion of truth and having persuaded consciousness to accept it unconditionally as truth. The deceived consciousness, in turn, compelled our body, through the vegetative nervous system, to respond to the challenge as described. Our body slavishly yielded to something which is by no means our free and informed choice, or free will.

These observations have led me to believe that where it comes to dreams the brain cannot identify the provenience of electrical and chemical signals it receives for handling. In all likelihood, the brain just cannot find that out. This circumstance is all important in the

application of both illicit drugs and licit psychoactive substances. Antidepressants, for example, would relieve or stop depression in humans by effecting changes to the interaction between separate neurons, hence, by influencing the information processing in the brain. The use of antidepressants makes us see the world in 'rosy colors' and feel generally better and at ease. This relaxed condition can be accounted for by the fact that psychotherapeutic drugs are capable of 'painting' the percept of the surrounding world in the brain in 'rosier' than it really is. Thus fooled brain then controls our body proceeding from such tainted data. The brain appears to lack mechanisms whereby it could know that the world in its immediate vicinity has remained unchanged – often tough and bleak and dull, and hardly ever a 'garden of roses' indeed. This is yet another example which attests to the tenability of the insistence that the brain resists seeing things (and reporting them) as they are. Alcohol consumption adds further evidence on the plate of this argument. Alcohol abuse exerts effects on the transmission and processing of information coming from the real world. Individual consciousness, then, may see reality around there either too optimistically or too pessimistically. The darker side of this delusion is that nothing has actually changed in the immediate physical milieu of the doped individual. The same considerations apply to drugs of abuse as well as to visual and sound effects. Animal experiments, by the way, have also shown that direct application of electrodes to neurons tends to generate alterations in the animal psyche and behavior. These findings also support the suggestion that the brain cannot recognize the source of information it relies on for the creation of its (illusory) truths.

Another strong evidence to the postulate that our brains reject reporting truth about the outer world is supplied by the advertising and promotion business. Every one has experienced the huge impact of their products on our lives and the stunningly persuasive

power of illusions of truth fabricated by this industry. The lure of the illusory 'needs' created in adverts has many times driven us to rush into unexpected and even quite extravagant purchasing 'choices'. The penchant of the human brain for manufacturing illusions of truth, on the one hand, and their cunning exploitation is nothing new under the sun. Already ancient shamans, tribal chieftains, and other astute minds in religion and politics (after Napoleon commonly referred to as *ideologues*) have appreciated this brain capacity and were very good at exploiting it in their own interests. You cannot fail to come across adverts promoting illusory truths devised by contemporary ideologues literally everywhere: on the TV screen, on the radio, on the pages of popular magazines, and, recently, on the Internet. They would impose themselves on you from the walls of buildings and from billboards planted along highways and even amidst the green of the woods. They won't stop before the door of your toilet room, invading the intimacy of its space through the images and messages on toilet rolls. Advertisements would lull you into believing that something is the best option among its kind, and that should you fail to buy the thing advertised (the very thing for you, now and here!), you'll kill your chance to be included in the company of those who have already own and enjoy the wondrous item. And notice, the physical parameters of the thing advertised are rarely highlighted. Frankly, all too often we don't seem to be keen on these altogether. It goes without saying that traders have become only too well aware of the fact that the illusion of truth is so pervasive and catchy that people would rather believe the advertised message about a given product than fritter away on such 'trifles' as its physically measurable and assessable parameters and properties. Media tycoons shape these to profitable ends. In the summer of 1998, the Slovak national daily *Narodna obroda* published the findings of tests carried out with eight types of a telephone answering machine. Seven of

these were eventually disqualified, leaving the eighth one as a clear winner. At that, the price of the best among the competing devices was not higher than that of the other three, disqualified, telephone apparatuses. But the examination of the eight advertisements revealed that each device had been promoted as top class or the best yet available. Needless to say, the cited test is in no event a solitary phenomenon. It is astonishing, though, that despite the fact we do often feel that the advertised item need not be really the best or even competitive enough, we are still prone to buy it. Such potent is the lure of illusory truths and imposed desires.

It would be pretty interesting to learn how many people really believe that our world was created 6,000 years ago. In this case, they, again, are free to choose from minimally two options. They can opt for the evolutionary account or adopt the creationist scenario. The discrepancies as to the timing are telling, though. The date generally accepted by Protestant Christendom is 4004 B.C. for the creation event, according to Archbishop Usher [5]. Much greater precision (or even the greatest precision possible) was claimed by Dr. Lightfoot, one time Vice-Chancellor of the University of Cambridge, in defining the date for the creation of man. On his authority, it took place at 9 a.m., October 23 [5]. Sharp.

We can learn the truth about certain phenomena of the outward world by means of methods employed in science. One among such truths taught in most primary and secondary schools is a historic-developmental linear account of the universe, the planet of Earth included. Strong scientific evidence (numbering hundreds and even thousands of specific facts and data) indicates that our universe and the Earth are products of a several billion years long process. The earliest known fossil organisms were single-celled and resembled bacteria as these are commonly known today. These primitive life forms may

date back from 3.4 billion years ago. This evidence notwithstanding, there is still there a group of people, many of them university-educated, who tenaciously cling to the belief that both the universe and our planet were decreed by a Creator several thousands years ago. They persist in their belief, though it is not supported by any reliable scientific evidence or logically cogent argumentation (at least, as I see it). How can we account for the above mentioned tenacious beliefs? It appears that some people's brains just resist to get persuaded by what is physically and historically obvious. They prefer just to ignore the heaps of evidence available (not unlike in the case of the optical illusion from Figure 1 and addressed earlier in this essay). This having been said, I would suggest that the brains of creationists process the incoming electrical and chemical impulses which carry the information on the emergence of the universe according to their 'tailor-made' algorithm. This, in turn, is a 'customized' product of the individual brain's hardware and software. It is the algorithm that would dictate to a certain brain region *how* to interpret the received information on the progress of the world. The outcome may be either in favor of a Creator or evolutionary development, and, of course, in favor of the whole gamut of options in-between. Another region of the brain, which actually constitutes consciousness or 'us', will supposedly read the appropriately interpreted version – *without* consulting the other brain regions, *without* making sure that the final account does correspond to the initial percept of the physical referent.

The same applies to the evolution of humanity. Science has at its disposal thousands of straightforward proofs testifying to the descent of man from lower organisms. Furthermore, everything that creeps on earth shares one ancient predecessor – such as crab, tree or mould. In other words, all living things share the common genetic code, and human beings are firmly fixed in the grand evolutionary chain of life. We do carry a great

many indelible marks of our common ancestry with the rest of natural creation. Still, a great many inhabitants of the Earth (about half of its population, on the authority of some statistics) disagree (either entirely or just partly) with an evolutionary account of life on our planet. They slavishly stick to the belief that man has been more or less directly originated by a Creator.

***

Tinkering with the truth

"As one opens up the newspaper in the morning, it is well to remember that what one reads represents a necessarily biased view. Colonel McCormick, the legendary publisher of the Chicago Tribune, *is often quoted as saying that a dog fight in the Chicago Loop was more newsworthy than a major war in China."*
– MIHALY CSIKSZENTMIHALYI: THE EVOLVING SELF

Many things around us are interpreted by our brains in terms of confirming their favored illusions of truth, their habitual beliefs and views, but not in terms of the real physical, and changeable, world. Not in accordance with the truth. Yet more striking, when the brain has at its disposal too scarce information for constructing its illusory worldviews, it would just add the 'missing' portions by guesswork. In all likelihood, it is essential for the brain system's optimal operation that illusions of truth passed on to our consciousness, 'us', should be complete, coherent, and cogent. This neatly packaged message is supposed to ensure that our consciousness, 'us', are not torn by doubts or uncertainties. It is in this vein that we can try to account for the apparently puzzling fact that the brain region in charge of illusion

production would feel literally *bound* to guess and add many things it deems missing – with a view to arriving at a further illusion of truth congruent with a series of the brain's earlier fabrications. The brain's moves in this case are similar to the ones when it 'finishes' pictures in creating optical illusions (via, for example, normally adding parts of the visual field falling on the blind spot which is void of photoreceptors; please refer to Figure 3). The brain's operation in this case is also identical to its deceitful strategy in the case of fooling us into seeing a 3D cube where there are just twelve lines drawn on the surface of the paper (see Figure 2).

This reminds me of a TV release I happened to watch back in 1993 during my stay in the United States. A tall Jewish religious authority was being interviewed on the Holocaust. When challenged with the question why, to his mind, the Nazis had committed such unprecedented crimes against humanity, the interviewee was at no loss to answer that the Holocaust was a means chosen by God by way of punishing the Jews for trespassing their sacred laws. For me, this looks like a very vivid example of how the brain had had to glean a great many facts and figures in order to reach the conclusion (illusion of truth) which would comply with and further reinforce the traditional sacred truth and holy faith sanctioned by the Tanakh. Isn't this just another guise of Figure 2 represented in the chapter dealing with optical illusions? Let me remind you that the brain interpreted the twelve straight lines drawn on the flat 2D surface as a 3D cube, for it had had some experience with such figure before, hence it had had earlier experience of making 12 lines on the flat surface be perceived as a 3D figure.

Take epidemics which used to afflict the European population well into the Age of Enlightenment. Not infrequently, these were attributed either to God, who allegedly meant the scathing diseases as punishment for people's sins, or to his opponent, Satan. Saint Augustine, for example, attributed diseases inflicted on the

Christians to the machinations of malevolent demons. We know today that neither was true. In those remote days, the brain – with its period hardware and software – assessed these epidemics the best it could, i.e., it once again confirmed the illusion of truth, consisting in a belief that this or another scathing disease had been sent upon as the divine punishment for the sins committed by humanity. Such corroboration of the illusory truth on the part of the brain used to be effective because of its perfect conformity with the biblical interpretation of the scourge. In the same vein, the brain used to confirm another illusory belief, namely, that we, unfortunately, share the world with a quaint crew of noxious demons. The fact of their real existence is also supported by the Bible. In conclusion, people's diseases were invoked to back the illusions of truth advanced and promoted by the Bible.

State-of-the-art scientific findings point out that the emergence of the universe as well as the birth and sustainability of life on earth have been only possible due to specific conditions and physical laws obtaining in the universe. Creationists, on the contrary, perceive the presence of the same specific laws in terms of the illusory truth they believe in, i.e., as another case for divine involvement [14 and 25]. It is quite remarkable that the faithful who accept the Big Bang hypothesis as a plausible account of the universe's coming into being, have managed, guided by their illusion of truth conventions, to find a place for their God even in this God-less, scenario. God, they would argue, is the Prime Mover who has triggered the Big Bang and, thus, created the specific conditions enabling the evolution of the universe and of the life on earth. Christian miracles provide further backing to the assumption that the brain stops not before guesswork as soon as it has not got enough information for the construction of a consistent and coherent illusion of truth – in other words, of the brain's fairly arbitrary interpretation of the world out

there. Most people who claimed to have been exposed to a Christian miracle were ardent and devoted believers. I will dwell on this at some length in the following chapter. Their individual brain hardware and software seemed to know only too well – and well in advance – how to interpret signals sent out by their excited senses of vision and audition.

It is fairly noteworthy (and revealing, too) that I have not heard of any instance when worshippers of one denomination could see a saint or any other supernatural being belonging in other religion of which they know nothing. Even in a dream, I bet my monthly salary on it. Equally, I assume that atheists have had far less opportunities than the faithful to boast that someone divine and supernatural had revealed herself, however briefly, to them. The ingenuity of our brains in constructing illusions of truth has even become 'proverbial' in the sense that there are plenty of proverbs, sayings, and fixed phrases which 'see the hand of God in everything': 'The mills of God grind slowly, but they grind exceedingly small', 'God tempers the wind to the shorn lamb', or 'God's punishment'. To repeat, these adages reflect the brain's capacity to treat and present events in a way compatible with the illusory truth about a just and benevolent God the believers trust in.

The confirmation of the ephemeral nature of this sort of constructed truths is to be found, at least as I see it, due to the fact that so many innocent people on our planet are suffering. Those who believe in a benevolent and just God must find such occurrences at best inconsistent. Paradoxically, all too often this is not the case. Here is one of the current clarifications provided by the faithful I happened to hear on Slovak radio: 'A career Jesus committed himself to is a mere sheen of light piercing the inscrutable mystery. God is neither present nor absent when you suffer. He would not intervene just when you invoke him; but He does appeal to your very soul, and encourages and animates your freedom… Our

occasional doubts are the consequence of the gradual growth of our faith. Bestowed with free wills, people are tireless pilgrims searching for their faith. God does respect human freedom, yet He offers us not ready-made answers to our questions. So, we too have an understanding of those whose faith is often tested. We have, then, to keep patiently going ahead, shoulder to shoulder, and helping each other in need. This will eventually bring us closer to God, despite our failure to ever solve the riddle of evil…"

Some people have been endowed with extreme, as it were, brain hardware and software incapacitated to guess a great deal more than there really is. Others possess more temperate and tempered minds, so their 'final touches' to the images obtained from the sensory organs are not so sweeping. The extremely equipped brains would tag the received information with either a positive or a negative sign, depending on which one fits in the cluster of previously constructed and circulated truths. In acting like that, the brain follows exactly the same procedure as described for the brain algorithm in the case of visual illusions (when the brain makes us perceive a 3D cube instead of 2D squares, Figure 2). With the twelve lines on the surface of the paper, the brain algorithm had two options: either to make us perceive the left square as the cube's side (tagging it 'positively') or perceive as such the right square. In forging an illusion of truth, our algorithm must be resorting to the same trick. Anyway, coming back to religion and worship. People who are committed to the view that religion just pulls the wool over the eyes of people have no difficulty in getting, on a daily basis, a wealth of information in support of their conviction. The faithful, by contrast, find no less ample evidence in confirmation of the righteousness of their faith and of their choice to live according to the principles required by their respective religious doctrine. Simply representatives of each of the indicated groupings have accepted the data coming from the outer world either

approvingly or disapprovingly, irrespective of the truth value of the latter. This holds for any ideological concept or account. The brains equipped with extreme, hence often extremist, hardware and software may be particularly arrogant in their disregard of messages released by matter-of-factual facts. Having arrogated to themselves a privileged access to the ultimate truth, they tend to show no interest altogether in seeking what they, allegedly, already own.

***

Illusions of vision vs. illusions of truth

"We normally allow a whole series of illusions to stand between ourselves and reality. Built out of genetic instructions, cultural rules, and the unbridled desires of the self, these distortions are comforting, yet they need to be seen through for the self to be truly liberated."
– MIHALY CSIKSZENTMIHALYI: THE EVOLVING SELF

I commit myself to the assumption that there exists a significant divergence between an illusion of vision and that of truth. The matter is that our brains can detect the former and even assess it in qualitative terms, while the latter defies recognition and qualification.

This may be accounted for by a lower hierarchical level occupied by the brain's sub-regions in charge of visual illusion production than the level occupied by the sub-regions involved in the generation of illusory truths. It may well be that the latter are part and parcel of our consciousness. We are capable of getting an awareness or, in other words, our consciousness can find out that the brain's region in charge of optic illusions sometimes deceives us. Let me remind you of the pictures described

in the chapter on optical illusions. We have also to accommodate the finding that the brain region responsible for illusions of vision wouldn't yield to the persuasive language of real facts, keeping to insist on its illusory visions. It is exactly due to this awareness of being fooled that we can amuse ourselves at the delusion. Around the U.S. alone, for instance, there have been built seventeen tourist attractions known as an anti-gravity house. These literally put to use illusion of vision effects and offer them as a fairly popular entertainment (http://www.illusionworks.com/html/mystery spot.html).

Yet where it comes to an illusion of truth, we fail to realize that our brains fool us regarding what is really going on around in the physical world. This would occur because the very same algorithm that controls the construction of truth illusions is also in charge of checking up the latter's correspondence with the facts reported. Consequently, caught in a vicious circle, our consciousness is doomed to eventually arrive at the illusion of truth instead of at a reliable account of the matter of fact outside our brains. To refer once more to Figure 1, we might take a look at it even one hundred times and still get the same illusion of truth, but never a real reflection of what is really represented in the drawing. It, understandably, cannot be otherwise because the very same algorithm will be in charge of image-creation. Instructed by this algorithm, the brain cannot, of course, do the entrusted job differently from the usual. Were we able to detect and reflect an illusion of truth, we could not help then taking into consideration and living with at least two truths. But the hitherto evolutionary development has not yet secured such shrewd detection mechanisms within our brains. That is to say that the human brain's hardware and software disallows, for example, your commitment to the ideology you identify with and, in the same breath, your disbelief in its truth and righteousness. Should we have some sort of 'me'

inside the brain, capable of checking the 'I' of our brains, we could, in all probability, recognize dirty tricks played on our consciousness through smuggling into it illusions of truth instead of feeding into it unbiased and veridical accounts. Unfortunately, there is just one 'I' of the brain for us to refer to for true information. This is the treacherous brain's 'I' which chooses to keep misrepresenting the truth of reality which exists beyond the mind and preventing us from understanding the ultimate identity of all things.

The dictate of one truth, though, may have survival advantage considerations underpinning it. Just weigh up survival opportunities of someone entertaining two plausible truths. Of necessity, she must have been disadvantaged in terms of successful response to the challenges of the immediate vicinity and reproduction over their rivals committed to one truth. It needs to be stressed once again that the brain, shaped and adjusted over the long course of the human evolution to meet the cited survival purposes, must have found it most useless to take the bother of digging for some sort of 'objective' truth. The brain's vital evolutionary responsibility was to ensure the reproduction of the human species, not to chase the phantom of 'objective' – largely impracticable – truth. The brain has ever been keen on survival advantages, and these, roughly, come down to fending for and fending off. It is not inconceivable that the modern brain's updated key responsibility lies in adjusting its hardware and software to new survival challenges, and the latter may require the closest possible blurring of illusory and 'hard' truths. For the time being, however, I find it difficult to tell with any degree of certainty whether the ongoing evolution will reward, in terms of reproduction, those who follow the clarion voice of the natural world or, rather, those who lend an ear to the comfortable whisperings of illusory truths.

***

Extreme brains, Luciano Pavarotti, and shooting sprees

"On June 13, 1949, Pope Pius XII reaffirmed the Church's opposition to communism by decreeing through the Holy Office that those who joined or aided communism in any way, or even only read communist literature, would be denied the sacraments…"
http://www.fatima.otg/3rdsecret.html)

It has long been clear, on the strength of information provided by the inquiries into many other cases, that different individuals are equipped with unequal brain hardware and software. The way in which their brain equipment operates in producing an illusion of truth may be, for the sake of vividness, compared with the workings of the brain's hardware and software responsible for analyzing electrical and chemical impulses caused by the stroke of a sound wave against the ear-drum. Let's confine ourselves, for the moment, to the impulses carrying music information.

It is a matter of common knowledge that some amongst us have a very good ear for music, others just a very mediocre, and still others are very bad at it. It is quite common that the music-minded should also sing very well, while those endowed with a minor music talent would sing out of tune. Why is that? The point is that having a good ear for music implies a good ability of the brain's hardware and software to analyze the incoming electrical and chemical signals released following the stroke of a sound wave against the ear-drum and to correctly process and store them in the brain's memory. Now singing beautifully implies having a sort of hardware and software capable of prompt retrieval of the

stored information, its unerring analysis, and the ensuing production of thousands of electrical and chemical neural impulses that will transmit this information to each cell of the vocal chords. Thus received information is to be further processed within the cell, making the latter either stretch or shrink. Such concerted behavior of thousands of cells in the vocal chords create the required wavelengths.

Quality music hardware and software is popularly referred to as a talent for music. Training may substantially improve one's ability to perform music or sing. In other words, in training, we actually try to additionally tune-in the hardware in order to refine our software. Yet the inexorable truth about talent is that no one with mediocre natural dispositions will ever have grown into another Enrico Caruso, Maria Callas, or Luciano Pavarotti – nor even after the long years of committed training under the world's most illustrious instructors. Hard though you may try, you will never reach the levels of excellence required from a singer to be hired by La Scala or the Metropolitan Opera. Just you haven't got a sort of hardware and software indispensable for coping with the task.

Consider a further example provided by the grades appearing on primary school report cards. Not only teachers know that some students may be good at mathematics and physics while others excel in the languages and civics. This reminds me of one well-known Slovak comedian who, while a student, used to have a fear of physics and, generally, could not make much sense of it. Another actor also referred in his reminiscences to his difficulties in understanding chemistry. These past phobias of people now in the spotlight remind me, again, of one of my classmates at primary and secondary school to whom physics and chemistry used to come very easily, but learning six stanzas of a poem by heart would be a pretty exacting experience. It is fairly safe to conclude, on the face of this evidence, that some people's hardware

and software is better equipped for grasping the laws studied by 'hard sciences', while in others their cerebral organization is more suitable for handling the humanities.

So, the brain's disposition to deal with these rather than those discourses, and understand certain relations and associations of ideas more successfully than others (popularly dubbed 'talent') actually reflects, in our example, the qualitative parameters of given hardware and software relevant to individual school courses. In more technical terms, such disposition is nothing else than the brain's ability to analyze the incoming electrical and chemical impulses, synthesize, and generalize the received information, and, perhaps, eventually to fabricate illusions of truth. The brain's hardware and software can be further refined by tuning-in. Yet it is not the case that any one student may be brought up, no matter what kind of training she gets, to become a new Voltaire, Kepler, or Einstein provided that she tries hard. Diligent though some of us may be, we will never reach certain things for the mere reason of having been bestowed a sort of the brain's hardware and software which misses what is needed for meeting the ambition. Most brilliant artistic and intellectuals sorties are firmly footed in the material idiosyncrasies of one's individual gray matter. (The most recent diggings into Einstein's gray matter, which was quite unusually structured, may have an answer to his genius. It looks like a genius is born, not made.)

It would often be the case that a student's talent for certain courses is compensated, as it were, by her lack of talent for other subjects. In this context, it is helpful to refer to the information on the intricate connections of neurons in the brain or neural networks. In *The Astonishing Hypothesis* [1], Francis Crick describes the experiments carried out by Helen Neville and her colleagues. They explored the activity of different brain regions in genetically deaf people (with a genetic

deficiency most likely in the area of the ears, not in the brain). The results of their experiments allowed the assumption that parts of the impaired auditory system had been colonized during the brain development by parts of the visual system. This leads us to suggest that if a certain brain region receives no electrical and chemical inputs from its respective sensory organ, the vacancy starts to be penetrated by the electrical and chemical inputs of another sensory system – by way of compensation for the dysfunction of the impaired organ. This is to say that a functionally vacant brain region tends to be occupied by another sensory system (a guise of the Torricellian 'nature abhors void').

Similar to students who may be better than others at mathematics, chemistry, history, or languages (due to their more suitable hardware and software), the brains of individuals equipped with a 'higher quality' hardware and software can produce illusions of truth (worldviews) that are closer to the empirical facts of the real world than the pictures of the world embraced by others. The gap may be at times nothing but dramatic. I am not sure if an illusion of truth follows Gauss' probability distribution scale, anyway, equally to listing extreme cases of brilliant mathematicians, biologists, and composers, we can cite at least as many examples of people who exhibit a very unimpressive excellence and achievement levels in all these discourses and activities. It may well be, though, that some extreme cases of illusory truths reflect the outside world with more verity than statistically the most probable illusion of truth.

Examples of the brain hardware and software extreme functioning are many. Such extreme brain performance is likely to be encountered in the milieu of extreme religious sects, in people who commit serious crimes, or, too, in people confined and treated in psychiatric clinics. People joined in religious sects do believe in extreme truths, which is often confirmed by their behavior and acts. Over the recent years, we have

learned about many extreme sects due to their involvement in the death of a number of people. Let me remind you of several most notorious ones. Following the extreme dictates of their sectarian philosophy, fifty members of the sect led by the Belgian Luc Jouret committed suicide in Switzerland and the sect's five more members did so in Canada (October 4-5, 1994). Now the sect's leader Jim Jones and his nine hundred followers committed a mass suicide in Jonestown, Guyana (1978). Twelve people were killed with nerve gas by the members of the Japanese sect led by Aum Shinriyo during their assault in the Tokyo metro (March 20, 1995). Now the 82 members and the leader of the sect David Koresh most probably committed suicide in 1993 when their base near Waco, Texas, U.S.A., was raided by police. In March 1997, the thirty nine members of the sect Higher Source committed suicide at Rancho Santa Fe, California. Two people, aged between 18-24, had left two video cassettes and a letter where they had tried to explain their decision. By committing suicide, the letter read, they wanted to get to the spaceship UFO hidden behind the comet Hale-Bopp seen in the sky with the naked eye. They believed that the cosmic shuffle had come to collect them, and, the letter went on, they would be only too pleased to quit this planet for good.

Similar sects committed to extreme truths are multiple. Here also belong, for example, members of all kinds of racist and terrorist organizations as well as extremely naive people of whom one learns on and off, with plenty of amusement, from police reports. But the occurrence of people who identify with a wide palette of extreme and extremist truths gives further credit to the claim regarding a wide diversity encountered across the human brain hardware and software.

Let me catalog for you more examples that back up the insistence that the cerebral hardware and software encountered in the Earth's rank-and-file tenants is really remarkably differentiated. You may know that the

prophet Joseph Smith founded Mormonism around 1830. Some people identified with his doctrine and adopted it as their life philosophy because their brains' hardware and software worked out an illusion of truth compatible with Joseph Smith's pronouncements. The ranks of his followers stand today at seven million people. But, further, there were much more those who did not believe in Smith's twist of truth. The majority of people nowadays are indifferent to Mormonism and its beliefs due to the reality that their brain hardware and software has been tuned in to other guises of truth.

To further stretch the analogy, more other brands of illusory truths are displayed by the main religious divisions such as Calvinism, Lutheranism, Shinto, Theism, Zoroastrianism, Taoism, Sikhism as well as hundreds and hundreds of less diffused ones. Their covering branches include Christianity, Islam, Judaism, Hinduism, and Buddhism. Overall, the portfolio of illusory truths accumulated by humanity in the realm of its response to the divine is nothing but impressive (some of these long worn out and flung away). Curious enough, different truths may oftentimes have parallel co-existence, not without occasional minor or major frictions. Yet sometimes such co-extensive and co-temporal presence of divergent truths need not be altogether smooth. Recall the recent conflicts within religious communities whose members happen to be committed to different dogmas. Their controversies have made headlines of national dailies and top news on prime time national television. Among the world's notorious spots of such irreconcilable illusions of truth are Israel and Palestine, and the imbroglio in the former Yugoslavia with its Kosovo humanitarian tragedy topping the list. Even today, on January 1, 1999, as I am putting down these lines, the news desk host is reporting the death of fourteen Shiite Muslims following the assault and the shooting spree of unknown raiders at the village praying site in one of Punjab provinces. The next news reported

the deportation of the eleven members of the sect of Concerned Christians from Israel to the United States on the accusations of their having designed to commit a mass suicide in the territory of Israel at the close of the expiring century – with a view to getting Christ to come back to earth. A pretty great deal of this sort of news has become the daily order.

The fact that people's brain hardware and software display striking differences regarding not merely beliefs in the supernatural, but also where it comes to secular concerns is palpably manifest in civil wars. Consider the Civil War of 1936-1939 in Spain, when the nation was divided into a rebellious, Nationalist zone, and a Republican or Loyalist zone. Not only the country's population, but also families became split by their separate illusions of truths for which they did not hesitate to fight and even to give their lives. Now nothing less than a scary historical example of conflicting militant illusions of truth is provided by the events and episodes of the Bolshevik's revolutionary overthrow (the so called 'Great October Socialist Revolution') and the ensuing devastating Civil War in Russia (1917-1920). Further and more recent evidence of a bellicose charge oftentimes released following the collision of plural illusions of truth is supplied by civil unrest and wars invariably cropping up across many quarters of the twentieth-century world, including Mexico, Sudan, Angola, Yugoslavia, Ethiopia, China, and Lebanon. All our history bears innumerable punches of human tragedy and waste brought about by the wielders of extremist accounts of the world. All our history, in cerebral terms, bears the traces of violent ruptures caused by ideological wars between incongruent brain algorithms.

To recapitulate, the availability of many truths constructed by different brains about one and the same object of the real world (or 'things in the broadest sense of the word') testify to the fact that each individual pursues an illusion of truth of her own she is committed to – often

without reservations. An illusion of truth is another clue to a fuller grasp of machinery clanking behind illusions of belief, behind the notion of the supernatural consciousness, of the soul, and of our so called free will, which turns out to be pitifully and shamefully enslaved by the imperatives of the material brain.

It would be interesting to know what kind of illusion of the surrounding world is entertained by leopards, sharks or bees. Again, I was wondering if they let themselves be fooled like humans do. Perhaps, yes.

***

Illusions of truth abused

…"Metaphors, images and expectations… Americans prefer something that isn't there. They are in love with the idea of a thing, not the thing itself. Of those who buy jogging shoes, 70 per cent don't jog. …A television commercial is an artifact far more subtly made than the product it advertises… Political promises belong to the realm of surrealistic fiction. Like the government in Washington, the economy floats on the market in abstraction – on the credulity of people willing to pay … for a domino theory, a stock market tip, or any other paper moon with which to furnish the empty rooms of their desire."
– LOUIS LAPHAM: PAPER MOONS

Let us return to an illusion of vision as described in Chapter Two. As we could see, it can be cunningly used/abused for making someone believe in something she is dead sure is wrong in terms of the physical world of properties and measures. You can, for example, persuade somebody into believing that a uniformly shaded band is darker on its one end than on the other (refer to Figure 1)

– just by placing the band at issue between two other bands of unequal brightness. The brain's algorithm will process thus 'staged' information and make us perceive the band as unequally shaded on its two edges.

This principle has been appropriated for deliberate fabrication of illusions of truth. Thus pre-packaged misinformation is popularly called indoctrination, propaganda, and brainwashing. When illusions of truth are created with recourse to this principle, then it suffices to place the needed piece of misinformation between carefully chosen 'bands' of other facts and considerations usually reached for as a suitable 'surround'. The trick does work, and the current market success of many advertising agencies and promotion companies gives credit to this claim. Production and dissemination of deliberately fabricated illusions of truth have become integral part of our civilization, and it literally works miracles. Very too often, though, illusions generated by advertising business and used in brainwashing may become a very adverse agency in shaping the life of both individuals and of whole societies. I shall try to substantiate this by some examples.

The first one has been taken from my book *We the Twenty-first Century Mo(dern)slaves Swear* [2]. The tobacco tycoon Philip Morris allocated, back in 1995, $ 2.8 billion for the advertising campaign to promote his label's illusion of truth, in fact, his health-damaging products. The campaign was launched despite the fact that smoking statistics of the day were almost unanimous in showing that non-smokers life expectancy was by 22 years longer than that of smokers. This is to say that four smokers will aggregately cut down their lives by the impressive 88 years. To conclude, Philip Morris and other tobacco companies would kill one in four smokers. By my estimates, over one hundred million people may smoke this company's cigarettes, so the Philip Morris company may kill about 25 million people within 88 years. Hitler himself would have grown green with envy if he had

known that Philip Morris has managed to create a genocidal illusion of truth adopted by major sections of population, which – wonder upon wonder! – is taken as perfectly legal despite the universal awareness of the nicotine addiction consequences. What is actually at stake is a deliberate murder of over 25 million people! Moreover, this company's net annual profits are no less enviable than its death statistics. How come that the International Court headquartered in the Hague has been busy chasing several war criminals guilty of infinitely fewer deaths and trying to glean the evidence (which may oftentimes be an awkward and uncertain business) required for bringing them to the court, while the architect of the twenty-five million deaths keeps walking around unpunished? Actually gets away with murder. How can it be that human rights activists have so far tried to challenge Big Tobacco and its addictive output only within the U.S.A. of all the world's 'smoking' countries? (Congratulations, otherwise, to the Florida activists and authorities who have recently managed to fine the culprit by a handsome amount!) How come that investing 2.8 million US dollars by Philip Morris into advertising the illusion of truth – meant to eventually kill people – could have passed unchallenged by legal authorities? How does the tobacco industry manage to have all the many compelling issues, pending criminal investigations included, rolled into a settlement? This can undoubtedly be only possible due to our brains' disposition to get lulled into believing in deliberately constructed concoctions of illusory truths. I was wondering when humankind would live up to this awareness and normally adopt a ban on the production of deceptive truths which might have such profoundly adverse impacts on society. Really, why don't we agree on such a ban, similarly to how we have already prohibited the production of illusions of truth triggered by LSD, cocaine, heroin, etc. [2]?

My second example takes us to the illusory truths related to the U.S. former President George Bush. On December 20, 1989, may I jog your memory, he decreed the invasion and bombing of Panama's capital city. This decision was later confirmed by his live television address (for more details refer to my book *Some Banalities, Facts, and Unanswered Questions* [3]). The ensuing military 'mission' – nothing short of a barbarous act carried out in breach of international conventions, in violation of principles of democracy and human rights commitments – exacted the toll of over one thousand civilian deaths. This was performed with strong media backing, which had produced a submissive and permissive national and international environment. Now imagine that, let us say, a Mexican President issues an order to throw bombs on Washington D.C. No doubt, the cheeky leader would be immediately accused as a war criminal and, deservedly, condemned. But in the case of George Bush, the institutions of mass communications managed to create an illusion of truth to the effect that his illegitimate and unlawful order to bomb Panama was righteous and in line with the humanitarian commitments of the 'international community'. The returns of then held opinion polls show that a wide majority of the U.S. general public supported this act of international terrorism, and between 75-85 per cent of Americans sincerely identified with the view that the U.S. had had the right to send off their military forces to Panama. Just a meager 8 to 18 per cent were against this intervention. Paradoxically, but not only was President Bush accused of one thousand civilian deaths or faced personal prosecution, but, due to the clever media campaign with its avalanche of illusory truths, he even came to be looked upon by so many as a champion of democracy and inalienable human rights. Yet more paradoxically, Czechoslovakia's last president Vaclav Havel, widely known as an H-humanist, invited George Bush, around 1990, to visit the nascent Central European democracy.

And, instead of being tried by the International Court for his war crimes, Bush preached down to the enthusiastic multitude crowded in one of the oldest European forums, Venceslas square in Prague, how vital it was to be committed, like himself and his exemplary nation, to democracy, freedom, and justice. And the people in Prague took him at face value, as it were. Examples of illusory truths capable of convincing people that someone who is actually a criminal is not, and vice versa, have never been difficult to find. Recent battles waged for either ownership or control or merger of the mass communication institutions leave nobody in doubt as to the all-importance of illusions of truth in power games played at the close of the second millennium.

***

The tyranny of the 'international community'

"I am not yet born; forgive me
For the sins that in me the world shall commit, my words
When they speak me, my thoughts when they think me,
My treason engendered by traitors beyond me,
My life when they murder by means of my
Hands, my death when they live me."
– LOUIS MACNEICE: PRAYOR BEFORE BIRTH

The dubious ability of the human brain to produce illusions of truth was long before recognized, explored and cleverly abused by shamans, tribal leaders, medieval princes, warlords, royalty, nobility (contemporary celebrities maintaining the tradition). Their comfortable and wealthy existence – the envy of the remaining less lucky – has always rested on the artful use of this systemic distortion performed by our brains. Constructed truths have come to be indispensable part of public

discourse across the countries loudly referred to as *democracies*. Modern 'democratic' theory takes the view that the role of the public (looked down to as the 'bewildered herd', in Lipmann's phrase) is meant to be just spectators, not participants, let alone agents (see on that Noam Chomsky's *Secrets, Lies, and Democracy* [4]). It is assumed that up to 80 per cent of the Earth's population could be today appropriately manipulated and brought to believe in pre-packaged illusory truths. Both fascinating and creepy experience is provided when one comes across the outcomes of brainwashing and of trust in such constructed truths as they would stare at you from the pages of historic documents and from the screen. I have been most recently exposed to one of these. The event was 'staged live', September 15-16, 1998, outside the building of the commercial and private TV station Markiza based near Bratislava, Slovakia's capital city. As part of its election campaign in favor of certain political alignment, Markiza staff reporters managed to use Markiza ownership dispute with another institutional claimant (normally settled elsewhere in the world in the court) for 'driving' out of their homes and bringing in front of Markiza HQ a few thousands of the most vehement members of the 'bewildered herd' and manipulating them in line with the station's election campaign commissions and commitments. The speeches of the 'bewildered and the manipulated' slavishly aped the worn out slogans of times long past (sometimes coached in new words). The likes of these 'meetings' must have resounded on many squares all over the world: Go and have done with the Communists! Cultural revolution is what will save us! Have done with the Jews! Haven't you killed any kulak yet? Don't you know that they have been taking what is actually yours? Don't you realize that 'them' are to blame for your misery and hardships?!

You and I are daily witness to dozens of examples how the media, through the administration of illusions of

truths/half-truths to their readers, listeners and viewers, drives them where the all-powerful opinion-shapers please and need them to be in order to add their individual battle-cries to the tally-ho of the enigmatic and anonymous aggregate invoked as the 'international community'. Further, complaints about the unbalanced information released by the media are pretty scarce. I've read one of these today (February 2, 1999) in the Slovak national daily *Narodna obroda*. The author seeks to unveil the imbalance between the interest taken by the EU media and EU senior officials in the Serbian-Albanian conflict in Kosovo, on the one hand, and in the Turkish-Kurdish one, on the other. The first one, involving the struggle of the Kosovo Albanians for the autonomy of Kosovo within the Yugoslav Federation, has received extensive coverage in the media, with NATO immediately involved in the solution of this ethnical and political dilemma. The recent Rambouillet peace talks near Paris had as their premier aim the achievement of an agreement which would allow the Kosovo Albanian minority to live in peace on their land and enjoy the whole gamut of universally accepted human rights. NATO threatened the Yugoslav Federal Republic with air strikes (Remember, 'Nation shall not take up sword against nation', 'Nation should speak peace onto nation'?) unless the imposed treaty had been signed. It was not, and NATO unleashed attacks against Yugoslavia, with aircraft consequently flying combat missions against the Serbs for over seventy days. Somehow NATO had unequivocally taken the side of the 'mistreated' Albanian minority in Kosovo (Remember Tony Blair's "We will not let you down!"?). I was putting final touches to my essay when the CNN periodically broadcast 'on the hour update' of the ferocious cruise missile attack on Belgrade (a sin against civilized standards in itself, with pictures of buildings aglow and hundreds of thousands of refugees streaming along the roads in the center of Europe). The war theater was being assessed hour by hour, complete

with very graphic accounts of the humanitarian tragedy in Kosovo (NATO, one has to bear in mind, being the catalyst of the catastrophe). Paradoxically, both the media and NATO have never been so keen on the disagreements between Turkey and its Kurdish minority, for all that this conflict supplies an example of the outrageous violation of human rights. For twenty years now, Turkey has been terrorizing on a national basis its Kurdish minority. As a consequence, thousands of Kurdish villages have been destroyed, and over two million people have been forced to leave their homes. Curiously, neither the notorious 'international community' nor EU leadership look willing to develop any effort in order to convene a peace conference and seek a peaceful settlement of the Kurdish plight. Nor are they drumming into our heads that the Kurds, similar to the Albanians in Kosovo, are entitled to fundamental human rights and, for a start, to a peaceful life in their homes. Even the ever alert NATO seem to find no grounds for threatening Turkey (Oh, so vitally important as one of the world's principle oil transporters!) with a 'holy war' for her appalling infringement of the human rights to which the 'mistreated' Kurds are entitled. On par with the 'oppressed' Kosovars. The most recent capture of the Turkish Kurds' guerrilla chief, Abdullah Ocalan, and his mistreatment by the Turkish authorities throws the above parallel into yet more relief. In an attempt to humiliate the defeated man, the television footage showed the Kurdistan Workers Party leader, admired as opposition to the Turks (and eventually sentenced to death), with the blindfold over his eyes. There is a lot of ignoring and ignorance that goes on in these kinds of situations. (Suffice it to recollect how Croatia was, in 1995, ethnically cleansing 170,000 Serbs, with NATO considering not bombing its capital city, Zagreb).

To conclude, the cited episodes from international life provide palpable evidence to the effect that the 'bewildered herd' all too often fails to realize the measure

of manipulation involved in presenting the 'objective' truth meant for them to embrace. They are not aware of the fact that the media fool the general public into believing illusory truths in order to have the rank-and-file to accommodate and support the twisted message the powerful of this world are interested in: the all-importance of the settlement of the Kosovo conflict at all costs and of saving the mistreated Kosovo Albanians, on the one hand, as well as the insignificance of the Kurdish ordeal, on the other. These illusory truths have been appropriately seasoned to be then promoted into one and the only truth for the people of 'good will' to take close to their hearts and endorse.

***

Forget Joan of Arc (1412-1431)

"The Maid of Orleans, a national symbol in France… The farm girl from Domremy on the Meuse was a visionary who claimed to have heard the voices of the archangel Michael, St. Catherine and St. Margeret, and to have received divine inspiration to restore the greatness of France. Her charisma enabled her to bring about the coronation of Charles VII at Reims and to win several victories in the Hundreds Years' War before fortune turned against her… Accused of blasphemy, sorcery, and the unnatural wearing of the men's clothing, she was interrogated under torture, initially pardoned but then – in a time of ever greater fear of witches – condemned to be burned at the stake…"
– HANS BIEDERMANN: DICTIONARY OF SYMBOLISM

There exists strong historical evidence that illusions of truth nourished by belief in the eternal and unquestionable trustworthiness of sacred texts used to bring about incredible human tragedies. The so called Children's Crusade is one of these. The eleventh and fourteenth centuries in Europe were marked by the crusades of 'good' Christians to the Holy Land with an aim of cleansing this Near East territory, associated with the life of Christ, from the 'unfaithful' Muslims. But when even the Fourth Crusade failed to meet the goal, new and more emotional ways of conquering the Holy Land back for Christendom came to be looked for.

Europeans in those remote times held fast to their faith in the truth of the Word of the Bible. Therefore, they used to be firmly convinced that the just God protects the innocent, first of all children. The Bible reads regarding this the following (Luke 17:2): 'It would be better for him to be thrown into the sea with a millstone round his neck than to cause the downfall of one of these little ones'. But the commitment to this illusory truth was the case of the historically unprecedented tragedy of 1212. In good faith that God is on the side of 'the little ones' and would never allow their downfall, the European Christian world fitted out the Children's Crusade to finally get rid the Holy Land of the unfaithful. The mission was to be accomplished by Europe's boys, mostly twelve olds, inspired by their faith in God – benevolent and just. They were led by a 12-year old French boy, Stephen of Cloyes and by the child from Cologne named Nicholas.

Historical records, alas and a pity, remain largely silent or vague when it comes to the particulars of this incontestably most controversial and awesome episode in the history of our civilization. Though there is Robert Browning's poem, *The Pied Piper of Hamlyn,* which obliquely touches on this event, I seriously doubt if it has ever been addressed by scholars in any systematic way (which is a pity given that today children are widely abused in different ways; they, for example, are widely

recruited, particularly in Africa, like soldiers and sex slaves). The available data even disagree as to the number of children involved in the undertaking, allowing the margin between 30,000 and 70,000-90, 000 boys. At the very onset, the crusade proved tragic for most of those involved; they either perished or were sold into slavery. I don't know how many children managed to survive, how many children of Europe laid down their budding lives far away from their unwittingly cruel parents. But I will never cease to be curious about the role played by then incumbent Pope Innocent III – undoubtedly counseled by other senior ecclesiastics – in putting such a counter-rational and bestial idea in the people's head, let alone, in allowing to materialize the gruesome design. Will European Christendom ever rise up to the ethical challenge of scrutinizing and assessing this shady stretch of its own annals?

This takes me to another inglorious period – the notorious witch hunts. One cannot help but insist that these provide another revealing example in terms of how sincere commitment to illusory truths may eventually result in a tragedy. Let us again refer to the Bible. Regarding the issue discussed, the Holy Script reads this: 'Though shalt not suffer a witch to live.' (Exod.22:18). One defies to believe it, but this single sentence from the Bible proved sufficient, once supported by the consent of the broad sections of the Christian world, for committing to the flames – or discriminating against – tens of thousands (if not hundreds of thousands) of innocent people. The overwhelming attitude of the day was reduced to the extreme creed, 'the giving up of witchcraft is in effect the giving up of the Bible'. Again, one has no opportunity to find any reliable data regarding the number of the victims burnt at the stakes of Europe between the fourteenth and eighteenth centuries. Certain estimates of the persecuted and murdered in medieval Spain, for instance, suggest that during the Spanish Inquisition, up to 100 alleged witches were daily burnt

alive during 1692. Overall, any research into the more exact figures of the witch hunt victims is obstructed by the lack of evidence, as, in most cases, the punishment entailed wiping off any trace left by the 'unworthy' life of the executed witch. So, all identification papers as well as the proceedings of the trial were usually committed to fire, along with the body of the culprit. Those remote days, often and not unjustly called 'dark', had little respect for commonsense or even for high social status. Period illusions of truth reigned supreme. I've come across a very telling confirmation of that in Bertrand Russell [5]. Towards the end of the sixteenth century, the story goes, Flade, Rector of the University of Trevers, and Chief Judge of the Electoral Court, after condemning an endless number of alleged witches, started to be visited by the 'inappropriate' thought that their confessions might have been just due to the desire to escape from the tortures of the rack. His increasing reluctance to convict the poor victims of witch-hunts did not go unnoticed. Well, he was accused of having sold his soul to Satan and subjected to the same tortures he had used to inflict by his verdicts on others. Very much like his predecessors, he eventually confessed his guilt – just to be subsequently strangled and duly roasted alive.

When one delves into this gruesome abyss of European history (J.-M. Sallmann's Les sorcieres, fianacees de Satan [6] may be one of the most illuminating readings in this context), she would find it really difficult to believe that something so profoundly horrendous might have been ever taken for granted, and that human beings endowed with the brains might have been fooled by such apparent illusions of truth some five hundred years ago. Let us run through at least a couple of examples (there are literally hundreds of this kind in Sallmann's book alone). One among the more common trials was by water, when an alleged witch was thrown into water, with a heavy stone around her neck. If she managed to keep afloat, it was taken as if Satan himself

was helping her, so the woman was then burnt on this account. If she got drowned, the judges would declare her innocent. Very much in the same vein, again, was another trial procedure. If the accused confessed her guilt on the rack, she would be once more forced to recapitulate the confession within the following twenty-four hours in some other place. Given that the accused withdrew the confession, she would be subjected to new tortures … And it did not use to take much effort on the part of the devoted Christians to 'identify' a witch of either gender. One sixteen year old apprentice boy addicted to the persecution of witches, who claimed to have attended their sabbaths, hence to be able to identify masculine malefactors, managed to unveil and denounce to the Inquisition up to 6,210 men – allegedly 'guilty' of the communion with Satan. Confirmations of illusory truths pursued by the plaintiffs would be literally wrenched out of the 'heretics' denounced by their 'neighbors' to the Inquisition. Therefore, the victims – unwillingly – just further confirmed and enforced the dangerous follies, superstitions, and prejudices. One among such multiple illusory truths the tortured were supposed to subscribe to was that witches are wont to cook their concoctions on the cursed fire, using as the ingredients poisonous herbs as well as chunks of animal and human flesh…

May I just reiterate, on behalf of the many, my challenge to the contemporary Christian Europe: Will it find moral strength and courage enough for coming to terms, as a venerable and venerated institution, with the indicated uncomfortable historic episodes from its past or will it let the skeleton remain concealed in the cupboard of history – a history that may be so inscrutably selective when it comes to remembering? Which illusions of truth will be promoted on the authority of sacred texts for the faithful to believe and defend at the turn of the millennium? Tomorrow? Which illusions of truth are we supposed to be committed to on the strength of our belief in the independence of the media and in the virtues of

democracy? These 'absolute values', it needs to be reminded, have become for so many a modern substitute for the Holy Script.

It is most likely that we, at the close of the twentieth century, continue taking for granted a lot of illusory truths our distant descendants may find in some five hundred years to be hair-raising, naive, or merely ridiculous. Isn't the current campaign against communism (with its extreme truths, inflated rhetoric and reliance on the 'herd' instincts) a post-modern version of the notorious bigotry of the witch hunts, which have indelibly stigmatized the fifteenth-seventeenth century Europe? Isn't the illusory truth to the effect that the invisible hand of a free market economy is a panacea for settling all the woes on earth just a modification of the belief that all of us are in God's hands? And that God will never cease to take care of us? African and Latin American nations could certainly produce their mournful statistics of economic misery and national disaster they have inflicted upon themselves due to their blind belief in the dogma of the absolute advantages of free market economy inconsiderately imposed on their countries. The price paid for having adopted this modern illusion of truth is a waste of human life far exceeding the number of witches burnt in the murky days of the medieval Europe. These horrendous statistics will no doubt make our descendants' hair rise (if they have any). But the reverse of their reaction may well be amusement mixed with disdain at humankind's past myopia, follies and ignorance. Something resembling our present day response to the medieval witch hunt – a very mixed feeling involving strong moral condemnation and intellectual disgust.

***

Illusion factory and its machinery

*"Moliere's M*isantrope *leaves everyone without a shadow of a doubt as to his ability to neatly catch what is going on in the hardware and software of his protagonist. And the other night at the theatre I had an opportunity to get convinced that the actor entrusted with the role was really a skilled performer. He was excellent at having empathized with Misantrope's brain hardware and software operation."*
– FROM THE FEEDBACK OF ONE THEATER-GOER

Still young children, people will typically come to realize one day that they can easily agree with some of their peers while the views and actions of others go against the grain, as it were. It is but natural that you try to mix and make friends with people whose hardware and software is similar to yours. Adults will follow the same principle when joining clubs, political parties or sects; they seek understanding, career or entertainment among people who share the same illusions of truth. It happens at times that people switch their beliefs, or else they not infrequently come to believe that 'other' truths are dangerous. Such relatively homogenous human aggregations provide a foundation for the emergence of nations, political parties, various cultures and ideological streams, aristocratic and sport clubs as well as racist or anarchist organizations, street gangs and philatelist associations. One should not let out of her mind the stark reality that commitment to different illusions of truth has been the cause of multiple adverse phenomena plaguing human co-existence. These include wars, minor or major interpersonal contentions, and political battles, the latter usually exploiting rallying cries such as justice, freedom or truth (too general, as a rule, to be any good for the rank-and-file). As I have argued above, illusory truths,

often coached in inflated sloganeering language, are to blame for many a human and humanitarian failure, waste, and tragedy.

Let us pose ourselves two principal queries: Does the outlined hypothesis of the construction of an illusion of truth hold any water? If so (and, on the face of the existing evidence, I do believe it does), what does this knowledge entail in terms of the prospective development and behavior of humanity's individual members and of humankind as a whole? Acquiring this sort of awareness, I dare say, would have far-reaching implications. Equipped with this new awareness, people will have conquered another height in knowing themselves and the regularities obtaining in the world in which they live. The impact of such epistemological and psychological awakening might be graphically pitted against the one exerted by the realization on the part of our early forefathers that the crops were not contingent on Perun's (Slavic deity in charge of the thunder, lightning, rain, and harvest) divine moods; they, thus, ceased to offer to the once much dreaded and reverenced deity. Another, but much more monumental parallel of the possible consequences triggered by the new awareness is borrowed from the Aztec civilization. Once the Aztek acquired the realization that the sun would necessarily rise tomorrow to warm and to light the earth irrespective of human sacrifices to the bloodthirsty sun deity Uizilopochtli, that meant, in numerical terms, the halt of around 20,000 annual ritualistic killings of people at the sacrificial altar.

Further extending the point, once modern (or post-modern) humanity gains a clear understanding of the mechanism involved in the construction of illusions of truth, they may naturally stop waving the banner of their often parochial and necessarily partial truths. They will most probably stop viewing their individual accounts of the world as absolute truth worth waging wars or killing one another in its name. Living with this new

understanding of the sprawling and pervasive presence of illusory truths all around will get us to review and revise our ethos as well as perspectives from which we used to judge our own behavior and that of people committed to other values. I expect (and look forward to this) the number of both violent and non-violent conflicts have significantly dropped. I derive my assumption from the historical fact that the number of alleged witches burnt in eighteenth century Europe rapidly fell, following the advent of the Enlightenment when people started to consult their reason and natural laws before making choices and decisions. Theirs, thus, came to be much more enlightened choices and informed decisions.

My caution. It goes without saying that the workings of the brain and its mechanism involved in the creation of illusions of truth need be explored by means of methods employed in exact sciences. Again, the main postulates of the illusion of truth hypothesis should be taught as a core course on the secondary education national curriculum.

***

'The' truth: No one's monopoly

"The crusaders went to war with the Bible in hand, the Muslims with the Koran; not so long ago the cultural revolutionaries in China trampled the bourgeoisie while waving Mao's Little red Book."
– MIHALY CSIKSZENTMIHALYI: THE EVOLVING SELF

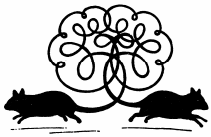
Of course, I think that my truth is the 'right' one. He is sure in the supremacy of his, and she, naturally, has no doubt that hers is the only right one. A herdsman over in India is convinced in the supremacy of his twist of truth. A mountain-climber watching the world from above

Mount Everest entertains his bias of truth. A casino bartender has a truth of her own. The same goes for Playboy club members, for Dalai Lama, Michail S. Gorbatchev, Brahmin priests in Benares, Pope John Paul II, Yasir Arafat, Margaret Thatcher, Tony Blair and so on. In the time of old, Moses used to believe in his truth, Gaius Julius Caesar promoted his version of truth, and so did Martin Luther, Adam Smith, and Karl Marx each. More other 'absolute' truths were advanced by Napoleon Bonaparte, Joseph V. Stalin, and Mao Tse-tung. Russian-born Ayn Rand (who allegedly knew Sir Winston Churchill more intimately than she was supposed to) believed, in turn, that her version of the truth was superior to the one held by her opponents. For myself, I've made up my mind to start tackling – head-on – the puzzling circumstance that my illusion of truth is so different from yours yet so similar to his. Admittedly, I will never arrive at the *ultimate* truth about the real world because mine will only be a partial view from somewhere, or someone's view. Yet, unless we have achieved to the awareness that illusory truths control our lives, we will have no chance to get rid of the spell cast over our selves by the treacherous Kingdom of Illusory Truths.

***

Chapter Three

Illusion of God



"And he [Galileo Galilei] did most to show, dramatically and undeniably, how easy it is for an assertion to be repeated by one generation after another in spite of the fact that the slightest attempt to test it would have shown its falsehood."
– BERTRAND RUSSELL: RELIGION AND SCIENCE

"I perceived that God has so ordered it that man should not be able to discover what is happening here under the sun."
– ECCLESIASTES

At the very onset of this chapter, I should like to make it clear that my *apriori* respect for people with their many values and accomplishments discriminates not between worshippers of various religions and agnostics. This is for one thing. For another one, I assume any views of my readers, who may uphold truths very different from mine, to be equally entitled, if anything, to consideration and sound judgement. Further, I just cannot help confessing my unbounded admiration for the noble poetry of most sacred texts and its clever fables, despite that I do perceive them as a more or less consistent and motley combination of myths, historic facts, and pieces of poetry.

I hold religious matters to be all-important in human life. Whether you believe in God or not may be crucial for the pursuit of your individual identity and for making sense of the world you inhabit. Finally the questions of faith are known to have shaped whole civilizations, and an illusion of some divinity as an object of worship and devotion is just one instance among so many other ideological illusions exploiting one and the same principle.

So, where do I stand in the matters of faith? Let me pose this twofold question for a start: How have the world and humanity come to existence and why is it that we and the universe exist? The most adequate answer I know of may run like this: I think it right to maintain that the universe, man, and the life on Earth are products of physical and biological evolution; this view relies on many a discovery scattered across various sciences. I have been led to assume, then, that material existence is both an integral part and outcome of the physical universe. When it comes to the second part of my question, I (not all that unexpectedly) have no answer to its 'why' and 'what for' challenges. Once again, Why is it that we and the universe exist? The sense of the universe defies me. I can't think of any plausible explanation why the universe should have been there at all. Many people before me used to be in the dark as to the phenomenon of our day luminary, the life-bringing sun. Why should it warm the earth and light the world in daytime? All too often, such question-begging used to lead people to the idea of a God. Again, I cannot answer the question posed like the people who although fifty years ago could find no explanation for impregnation or heredity. Once enigmatic and incomprehensible, these phenomena yielded their secrets following the discovery of DNA, RNA, their structure, and the genetic code with its laws.

The whole set of why-questions referring to the emergence and existence of our universe prove particularly tantalizing for the reason that you literally

don't have even a tiny straw to clutch at in order to begin answering them without being engulfed by the profundities of the challenge hardly ever to be met at all. To avoid a bad headache, I try to imagine that the world people claim to know is a large ball. I would place all visible and comprehensible things inside the ball and oust the ones we cannot make head or tail of outside. If you please to dub what is outside the ball 'God', I don't mind. **I would suggest, though, that what has been confined to the inside of the ball is hardly affected by the things relegated to the space beyond its bounds.** To stretch the analogy further more, our present thinking can only operate at the level allowed by the evolutionary available brain hardware and software found today in humans. Their levels achieved so far are not, presumably, advanced enough for grappling with such finely-grained matters as the provenience of our universe, its sense, and the rationale behind its emergence. You wouldn't expect fire-flies to have an understanding for the digging of irrigation ditches in Iraq or for the railroad transport difficulties in Slovakia, would you?

What ensues, grossly generalizing, bears to the issues in Christianity as it is currently pursued by most people on our planet (I myself live in an overwhelmingly Christian community). Frankly, I have been in part provoked into writing this chapter by the thought contents I had come across in several recent publications authored by either university professors or prominent theologians and top-level ecclesiastic officials. Their books offer the reader a glimpse of their faith and of its sources [7,8,9,10,11,12,13,23, and 25]. I cannot bring myself to accept their arguments: with me, they just lack in cogency. Yet worse, many of these would strike me as blatantly naive, and I cannot think of any logical train of thought which might have led the authors to the conclusions they present in the cited works as truth.

Their arguments are shaky and scientifically do not add up. This chapter, though, has been also prompted by the local stimuli. These have been coming along with the extensive body of literature released in Slovakia and featuring the 'confessions' of people in the public eye, incumbent senior administrative officials included. I have been amused at the fact how many of them claim to be faithful [13]. Obviously, it is not all that immaterial for, let's say, constituents whether a MP they have elected to Parliament identifies with any religion or not. A belief in the supernatural, needless to say, may considerably tint our approach to quotidian problems. A MP committed, for example, to Christian doctrine creates at the same time an image of man as we think he ought to be (perhaps, a man who believes that the best thing is resignation and that the kingdom of man is not of this world). In this light, I regard the contents of the indicated works to be textbook examples bolstering the illusory truths thesis explored in this essay.

***

Belief in God: Another popular illusion

"…*He* [man] *believes the Creator is proud of him; he even believes the Creator loves him; He has a passion for him; sits up nights to admire him; yes, and watch over him and keep him out of trouble. He prays to Him, and thinks He listens. Isn't it a quaint idea?"*
– MARK TWAIN: [SATAN'S] LETTERS FROM EARTH

The tenet of Chapter Two is that in processing the electrical and chemical impulses got off by the retina of the eye, a certain brain region constructs a final percept of the real world, and this brain's construct is not faithfully descriptive of the matter of fact, actually being

just an illusion of what is beyond the mind. The construct-illusion concerned is then submitted, without any further deliberation or verification, to consciousness (or 'us', or the mind as our awareness of the physical world). In Chapter Three I endeavored to spell out the machinery behind the construction of illusory truths, which are then either forwarded to our consciousness or are its integral part. By analogy, I assume that such mental phenomena as a belief in a God, or the opposite thereof, are formed in our brains in terms of other illusory truths; they will depend, too, on individual brain hardware or software found in individual people. The very possibility of pursuing fundamental beliefs in so many different gods, past and present, has led me to the conclusion that the illusions of God and of the soul are manufactured by our brains on the principles very similar to these explored in the above chapters. It is likely that as part of illusion of truth construction, the human brain would just 'complete' its skewed picture of outer reality by 'finishing' it with the idea of the world's alleged designer. After all, this wouldn't be any different from the brain's filling in activities when it forges its multiple illusions of vision ('guessing' and adding real-world things that fall on the blind spot). The introduction of some sort of supernatural being enables the brain to get a full and immediately comprehensible picture of the world fitting with what it is accustomed to.

Further, the wide currency of the illusion of God may be also accounted for by the fact that it helps the brain settle, fairly smoothly, many daily matters it would otherwise get bogged down in (with success unwarranted, into the bargain). Again, the illusion of God might be a sure activator of the brain Reward function (to be dealt with below). The 'reward complex' positive stimulation claim has been many times supported by the emotions reported by religious worshippers after their revelatory experiences. They would convey these in terms of 'tranquility, peace, ease, and the sense of life' conferred

upon them by the deity in whose existence they believed and in whom they trusted. A certain A.F. had this to communicate to the Slovak national daily *Slovenska republika* (December 23, 1998): 'On having met God, I was granted so many gifts and I was embraced by so much grace that my life since on has felt like a never-ending Christmas'.

One need not go too far to gather plentiful facts about religious experiences which unequivocally allow the classification of response to the divine as one among various illusions of truths. The very number of different gods and religions people used to worship and pursue in the past (and continue doing so now) testify to the tenability of the above claim. Sure enough, then, there are multiple affinities recognized across distinct religious denominations and doctrines. Last but not least, only very few among us fail to see the yawning discrepancy between the thesis of all-powerful God and the many appalling injustices and imbalances inflicted on the faithful and innocent in their daily life. With no one hurrying up to their assistance.

***

Too many gods to worship

"The polytheistic gods … are metaphors begotten of man's close association with nature and his sense that nature has a life and energy identifiable with his own."
– NORTHROP FRYE: THE GREAT CODE

I have no difficulty in seeing eye to eye with people who argue that it is since time immemorial (in the range of several tens of thousands of years) up to date that most people have believed in the existence of preternatural forces. These used to be mainly bodied forth as gods.

Albeit both gods revered and their devotees might vary, a faith factor has ever obtained there.

Philip Novak, the author of *The World's Wisdom, Sacred Texts, World's Religions* [15], quotes A.F.C. Wallace whose estimate of historical religions hosted on our planet approaches 100,000. Most of these, sure enough, used to be just local and long-abandoned by now (*Religion: An Anthropological View, New York: Random House 1966, 4).* What we have today is, in essence, very much the same picture. Look, if you please, through encyclopedias to come across a great many of currently practiced religions and of religious groupings identifying with them. Each of such religious communities, it is noteworthy, favors its own account of the world's and man's emergence. Each is committed to their preferential treatment of this matter, distinguished by idiosyncratic emphasis and bias. On the authority of *Microsoft Encarta 96 Encyclopedia,* it may perhaps be instrumental to stress, only some 20 per cent of the world's population identify themselves as agnostics.

In Philip Novak's book cited above, there are selected and gathered text samples of forty ancient religions. While reading through their inspired sacred texts, one cannot miss the amazing ingenuity of our remote ancestors, which shows in their attempts to explain the emergence and existence of the world, the Earth, and the man. For instance, the New Zealand Maoris used to think that the world was at the outset shrouded in darkness with water all over. Afterwards, the Supreme Io created light, sky and the Earth. The North-American Indian tribe, Omaha, were sure that at first the world had been populated by spirits alone. In search of a place where they could assume a corporeal form, they used to move about in the space between the Earth and the stars. The religious stories of certain Central African people run that in the dark, there only used to be water everywhere. So, Bumba was alone. A while after, he vomited up the sun, the moon, and the stars. Then nine living creatures

came forth, including a man. One origin-story coming from Western Africa explicitly recognizes that the world has been created by one androgynous deity. Tahitian tribes in Polynesia used to believe that it was the supernatural being Ta'aroa himself who became the universe complete with rocks and sands, and light, and everything. Different though they may be, these creation accounts have one thing in common, namely, they rely on some sort of preternatural being, or beings, somehow responsible for the origins of the world and man.

How can it come about that people, who knew nothing of one another and shared neither historic time nor geographical place, could have invariably postulated gods potent enough to create the universe, the earth, and man? A most veritable explanation coming to one's mind may be that people at large used to be, and still are, equipped with a roughly identical rule (in the brain hardware and software), which from ambiguous information available put together (and keeps performing this) a certain pragmatically viable illusion of truth. In the case we are looking at now, the latter assumed the guise of an illusion of the divine existence and involvement. This illusory belief seems to have been deeply etched in the human genetic code. The useful illusion established itself gradually, giving our remote human predecessors a competitive edge over their rivals in the great drama of survival (given that their adversaries had an evolutionary less relevant illusion of truth about the world's origins). The illusion of God's presence historically helped humanity to prevail over nature and other animals. Faith made their life more bearable by providing answers to many questions besieging their dawning consciousness. A hope for some life after death helped them overcome their dread of it as well as the anxiety generated by their inability to make sense of many natural phenomena and abstract notions. Religious beliefs rendered people stronger, and gods, our early ancestors used to maintain, heeded their pleas and

granted their desires. For adults, religion has come to be what fairy tales have been for young children.

In this context, let me recount one extremely revealing, and well documented story narrating how a sincere belief in the Christian God has helped his worshippers to win a battle. Emperor Constantine, who in 312 A.D. led a war against his enemy Maxentius, ordered (in heeding the vision he had had earlier) that the shields of his soldiers should be decorated with the monogram of the Christian God (XP in Greek). His assumption was that if the Christian God truly existed, the deity would help him to prevail in the battle. This became the case. It is known that the cited Roman Emperor gradually converged into the new faith, and he allowed, in 313 A.D., to legally practice the Christian faith all over the Roman Empire. Finally, the Holy City of Constantinople was built on his order (between 326 and 330 A.D.).

***

Too many Creators to believe in any

"Thus, in the end, there are no religions that are untrue. All are true in their own way; all respond, although in different ways, to the actual conditions of human existence … All are equally religions, just as all living creatures are equally alive, from the humblest ameba to man himself."
– EMILE DURKHEIM: THE ELEMENTARY FORMS OF RELIGIOUS LIFE

The suggestion that belief in a God is, most probably, illusory is endorsed by the following inconsistency. It is maintained throughout most existing religions that this or another supernatural being-creator has made the world and man within it. So far so good. Yet given that

the world has been made by Creator 1 (for convenience considerations, let he be assumed a number), as it is maintained by a certain religious community, we of necessity will run into a contradiction. The matter is that the worshippers of another denomination do firmly believe that it is their God, Creator 2, that has created the world and everything within it. Still other believers could claim the creation to the act performed by their God, Creator 3, and so on and so forth *ad infinitum*. How is it that this single world and people living in it might have been created by tens to hundreds of alleged creators (who even did not have the slightest idea of the existence of their rivals!)? Why is it that Creator 3, for instance, did not know that the world had already been launched by his predecessors, tagged 1 and 2? It follows from the above, then, that if, according to each separate religion, the emergence of the world and man are the responsibility of only one Creator, the rest of them cannot claim even their bare existence. The only place to relegate all of them, then, is the domain of illusory truths and beliefs designed on the whimsical blueprints of the brain (algorithms). The number of people who used to believe in the 'remaining creators', and continue doing so, is incomparably higher than those who claim to believe in the 'right one'. Even if one adopts the assumption that there is only one Creator, the above premises lead us to infer that the brains of the majority of people have created the illusion of belief in other, equally relevant, Creators.

***

More illusions: Supernatural phenomena

"I am not yet born; O hear me,
Let not the man who is beast or who thinks he is God come Near me."
– LOUIS MACNEICE: PRAYER BEFORE BIRTH

Are supernatural phenomena just illusions? I think so, and I will try to adjudicate this. It is sound to view the formation of the illusion of God by analogy with the mechanism of optic illusions. From this perspective, then, visions and apparitions of saints and gods to people offer a weighty proof on the plate of my contention that belief in God is one of the guises of an illusion of truth. The cited apparitions have been always supportive of people's most cherished illusions of truth. The faithful would most often experience such phenomena while in prayer. I know of no instance where a supernatural being from Christian religious discourse would appear to an individual unfamiliar with its tales and canonic images (although such appearance might have been fairly effective in terms of converging a certain 'unfaithful' into the 'right' faith). To further my point, I will refer to the stories recounting the apparitions of the Blessed Virgin Mary I have selected from the Internet's extensive offerings.

Who hasn't heard of the French Lourdes, a Christian shrine celebrated for its curative springs and massive pilgrimages? We are made to believe that back in 1858 a certain Marie-Bernarde Soubirous (1844 – 1879), a fourteen-year-old peasant girl, was distinguished by eighteen apparitions of the Blessed Virgin Mary. At a time of one of her theophanic experiences, Bernadette was busy learning Catechism. The Virgin Mary revealed herself to the girl when she was praying the Rosary and passing the beads between her fingers. Bernadette, later Sister Marie-Bernarde, described the apparition exactly as one can see the Virgin Mary in various sacred pictures

and books. The Lady of Lourdes presented herself in the guise of a lovely girl aged between sixteen to seventeen. She was wearing a white robe and holding a Rosary of white beads with a chain of gold. Curious enough, many a time Bernadette was not alone when she beheld the Blessed Virgin Mary. The other people present at the venue, however, saw nothing. This fact disrupts the tradition perpetuated by the Bible, which described the revelation of the divine as seen by all those present at the site, in fact, by the whole nation (God makes himself known through a series of miracles witnesses by entire nations). The water of the spring discovered by Bernadette at a time of one among the eighteen apparitions is allegedly miraculously healing, to believe the enthusiastic feedback of the many who have visited the holy place of Lourdes. I was wondering, though, why the water did not help Bernadette herself; she died of tuberculosis in 1879, only thirty-five years of age.

More apparitions were reported almost eighty years ago at Fatima Portugal. Around 1915-1916, we are told, angels (later followed also by the Blessed Virgin Mary) used to reveal themselves in those quarters to three village children. Among the children there were Lucia Santos, at that time between 8 and 10 years of age (born 1907) and her two cousins. While 7-9 year-old Francisco (1908-1919) could see the apparitions (but he was not able to hear anything), 5-7 year-old Jacinta Martos (1910-1920) claimed that she had seen and heard the angels and the Blessed Virgin Mary, but the Lady did not talk to them. All the children privileged to behold the sight were faithful and used to regularly pray the Rosary. The first apparition came about on a farm field in the afternoon. The children, while in prayer, saw the indicated supernatural beings. The Angel allegedly appeared to them several times and taught them how they should recite prayers. While reading the detailed account of the event on the Internet, I could not drive away the sensation that the girl's idiom feels too 'adult' and learned

for a ten-old. Like in the previous example, her description of Mary Virgin's looks overlapped with what one would see in religious books. It was a beautiful lady dressed in white.

Remarkably noteworthy, in this context, seems to be a still ongoing dispute over the apparition at Fatima (accessible at http://www.fatima.org/3rdsecret.html). Lucia Santos, a Saint Dorothy's Sister (still alive) who allegedly had seen the Blessed Virgin Mary, revealed in her memoirs (1942) the 'First and Second Secrets' allegedly entrusted to her by the Virgin. The Third Secret, some twenty-three lines, was put down by her on January 2, 1944, sealed in an envelope and handed down to the Bishop of Fatima-Leiria. In 1957, the sealed envelope containing the Third Secret found its way to the Vatican. The last secret, such had allegedly been the desire of the Blessed Virgin Mary, was supposed to have been revealed after Lucia's death, but not later than 1960. This notwithstanding, on February 2, 1960, anonymous Vatican sources let it be known that the Third Secret would not be disclosed that year and would probably remain, forever, under 'absolute seal'. The sources also said that on having read the message of the Virgin, Pope John XXIII, to whom the secret had been finally entrusted, had locked it away in a small wooden safe in his papal apartments. The Pope did not even make known the fact he had unsealed the envelope and read its contents. So, the Message of the Blessed Mary Virgin she had sent to the Earth was doomed to remain incomplete.

Since the first two Secrets were only revealed in 1942, small wonder that the prophecies contained in these parts of the Message had been already fulfilled. The Third Secret must have concealed something very disturbing and grave (a loss of a dogma?), considering the fact that the highest Church authority chose, on having learnt the third part of the Message, to suppress it, in defiance of Virgin Mary's wish. (To the best of my

knowledge, the decision has never been revised). What could have been wrong with the Third Secret? Wasn't it the case that its content was at odds with the illusion of a belief in God (backed up, understandably enough, by the Pope)?

The accounts of a few more Virgin Mary's apparitions to the faithful are to be found on the Internet, all of these following the pattern we are already familiar with after having looked at the Lourdes and Fatima instances. The Virgin Mary would appear to the faithful, obviously preferring children to adults. The sites involved are usually official or unofficial sacred pilgrimage destinations, quite often celebrated for bringing relief to the sick. Let us refresh our memory of at least some of these. The Vietnamese province Quang Tri was allegedly visited by the Virgin in 1798. In 1998, the site attracted as many as 120,000 pilgrims. In 1846 the Virgin was reported to have appeared several times to two young men at La Salette. Several people in Ireland claimed beholding the Virgin, Saint Joseph, and Saint John the Evangelist in the Knock Parish Church (1879). Mary Virgin was dressed in a white robe. She was also wearing a crown of diamonds on her head. This venue is nowadays visited by an annual average of about 1.5 million people. Now the Virgin Mary appeared fifty-six times in 1945 to a forty-year-old unmarried woman Ida Peerdeman from Amsterdam. Puerto Rican children at Barrio Rincón, Sabana Grande, also saw the Virgin. The children (Juan Angel Collado and two sisters Ramonita and Isidra Belen) were seven, eight, and nine years of age. Many times since 1981, the Virgin Mary has been seen at Citluk, Bosnia-Hercegovina, Medjugorje, by six young people. They remember her as an extremely beautiful woman, often with a baby in her arms. Starting in 1983, the Blessed Virgin Mary has appeared to the woman called Gladys Quiroga de Motta from San Nicolos, Argentina. This holy place is annually visited by more than 100,000 people. And, lastly, the Virgin Mary has

been allegedly seen by the members of one family from Schiller Park, Illinois, U.S.A.

***

Matters of faith as fresh taboos *(The Slovakian case)*

"Dr. Barnes was quoting the stories of the Whale and Ark as obvious absurdities, but at the same time warning his fellow-bishops that few educated persons believe literally even in Jesus's miracles. The merely agnostic attitude, 'He may have risen to Heaven; we have no evidence for or against this claim', has now given place in the back-rooms to the positively hostile: 'Scientifically, it does not add up."
– ROBERT GRAVES: THE WHITE GODDESS

When it comes to the Christian religion and the biblical truths, one cannot help wondering at the way the current mass media in Slovakia goes about covering these themes. One normally cannot get rid of the feeling that there exists some sort of unofficial yet extremely efficient ban on publicly discussing the matters of faith. Most of current (1998) radio and television releases addressing the questions of a belief in God are invariably 'pro' biased and overtly promote the opinions of their profoundly religious participants. Such one-sided 'disputes' are heavily reminiscent of notoriously propagandistic programs we used to be regularly fed some ten to twenty years ago, i.e., before the regulatory burden was eliminated. These awfully dull outpourings of the preconditioned mind used to be designed and broadcast as part of mandatory communistic indoctrination. The social scenario advocated by them was meant as the only and best one to embrace and pursue. Very much to the

disappointment and chagrin of the many, the current programs covering religious subjects ceased to feature, on a par, representatives of the faithful and of agnostics, let alone of atheists. The question of God's plausible non-existence has been rendered a high taboo. Again, such censorship is something we have had an opportunity to contemplate as happening some ten-twenty years ago. It was inconceivable at the time (when the media was an obedient handmade of the 'one' party) to broadcast a discussion which would have involved both those adhering to the communist doctrine and their opponents convinced, on the contrary, in the superiority of the capitalistic regime. Criticisms leveled against the postulates of the Catholic doctrine have become as unacceptable and even condemnable in the turn-of-the-century Slovakia as whatever challenge raised in the former times to the then dominant communist ideology.

Church services, in this perspective, offer a number of remarkably revealing observations. After the Word of God has been read, nobody discusses the words just heard. Moreover, none but a church priest in charge is entitled to directly ask any questions on Scripture and exchange views of its plausible messages. Such dialogue, though, might have been to the benefit of both the faithful and the unfaithful. By comparison, the situation reminds me of several 'open' party meetings at the level of primary partisan organizations in the former Czechoslovakia (I have had an opportunity to join several such sessions). But even in those notoriously oppressive times, the rank-and-file of the Communist Party were entitled to discuss the incoming 'pastoral letters' (otherwise 'party guidelines') and make reasonable amendments. Moreover, the resolution then adopted might have incorporated their amendments. So much by way of putting flesh on the bones of the idea of slavish receptivity. Most religions practice their faith in nothing but a totalistic and totalitarian manner. What strikes me as quite amazing is that people don't mind this streak of

totalitarianism and pressure when it comes to the matters of faith. They don't seem to perceive the practices involved as coercive, undemocratic or unfair. Yet more puzzling, people have always tended to choose one of the two major totalistic dogmas close at hand and to perceive the rejected one as wrong and adversarial. This apparent paradox may have something to do with the millions of years of human evolution, where blind bowing to certain necessities used to be a better choice in terms of survival than discussing their pros and cons and coming eventually to ambiguous (impracticable) conclusions.

After all, identifying with certain religious truths, such as 'In God we trust' and its likes – contained, for example, in the most widely used Christian prayer referred to as the *Lord's Prayer (*'Your will be done', 'Forgive us our trespasses', 'Lend us not into temptation', 'Deliver us from evil', etc.) – suggests and inculcates subordination and obedience not only to the supernatural, but as well to any authority in terms of mundane relations and behavior. People who identify with such truths tend, in their quotidian lives, to look up to and lean on someone whom they could venerate, serve, or just invoke for help, favor, and protection; someone to whom they could complain and who would 'deliver' them from evil. I wouldn't sin against commonsense in venturing a suggestion that a quick and multitudinous adoption of faith in God by large groups of people implies and entails their prompt and equally multitudinous putting up with subjugation, political and economic inferiority as well as with the humiliation excused by so called historical destiny ('I am dust and dirt'). This may account for so many instances and signs of lackey behavior, servility, and tail-wagging one would run into across various sections of Slovakia and, recently, of other Central and Eastern European 'societies-in-transition'. As I see it, the above also casts light on the reasons leading to the vigorous encouragement extended in my country, both from within and from outwards, to beliefs in the

supernatural (the latter oftentimes verging on straight superstitions). At a rough estimate, I'd say that the media in Slovakia are presently more committed, at least in terms of broadcasting time, to the promotion of religious faith than to the propagation of science and scholarship.

Let us turn to the nations of Latin and South America, Africa, or Near and Far East. All these are countries dominated by their respective fundamental religions which decisively affect the life philosophy of people. It will not take you long to find out that the indicated nations are not at the forefront of the scientific-technological revolution, and their reported living standards are pretty low. In economic and political terms, all of them represent, by western standards, dependent and backward nations. Again, it is noteworthy that contemporary political and economic globalization system tolerates and encourages in these countries a belief in the supernatural – pre-packaged by both 'advanced' and quite 'primitive' religious ideologies.

Where is the catch? The matter is that there are nations which have really made considerable historical progress exactly due to their consistent obedience to the laws enshrined in their traditional religions. But in our modern times the same commandments may prevent people from economic and cultural advance. As part of many religions, fundamental beliefs obstruct the adoption of contemporary economic values and realities based on the achievements of the scientific-technological and information revolutions. This outcome may be something in store for all religious doctrines which rest on the fundamental belief in God.

The above entails that, in all likelihood, the progressive evolutionary advantage secured by the fundamental illusion of God and so vital in the past seems nowadays to be losing in survival urgency and utility. It is being gradually superceded by more competitive illusions of truth. One needs to bear in mind that different historic periods require and favor different

illusions of truth. At the dawn of our millennium, for instance, in the slave-holding Roman Empire it was more reasonable to believe in and promote the illusory truth of slavery's benefits than to push forward illusory truths of liberal capitalism. The latter's chances at that remote time would have been less than meager (similar to these, for that matter, of a slavery-holding society today, at a time of the forthcoming information society). It is not unsound to expect, then, that the evolutionary advantage of the illusion of a fundamental belief in God may lose its competitive edge over other illusory truth of some sort. Taking into consideration an increasingly great role played by symbolism in our civilization, it might be even an image of something, exploited and promoted by the machinery of universal globalization.

***

The Great Code

"The Bible is clearly a major element in our own imaginative tradition, whatever we may think we believe about it. It insistently raises the question: Why does this huge, sprawling, tactless book sit there inscrutably in the middle of our cultural heritage like the 'great Boyg' or sphinx in Peer Gynt*, frustrating all our efforts to walk around it?"*
– NORTHROP FRYE: THE GREAT CODE

Religions obviously grow with time, doing their best to tune in to the ongoing change. In Bertrand Russell's phrase, in order to 'preserve the citadel', the Church 'surrenders the outworks'. Christianity, in this context, has ceased to insist on one of its pivotal illusory truths, namely, that the world was allegedly created within six

days some 6,000 years ago, to believe the unimpeachable Bible. Christian authorities have even adopted the theory of the expanding universe. It holds that the universe has emerged and continues getting formed following Creator's design. According to this theory, the universe is 10-14 billion years old. Furthermore, it looks like the Christian dogma is going to embrace an evolutionary approach to human development (I don't know, though, of any official statement in this matter). In short, Christians on different hierarchic planks are today free to believe in things for which they would have been certainly committed to fire as heretics even at such relatively advanced days as the seventeenth century [14 and 25].

I agree with those who contend that religions who rest on the belief in the omnipotent God are seriously challenged by the following questions: Why did the God, who is all-powerful – hence free to do what he pleases to – need to have created the universe and man? Was it the decision of his 'free will' or did he just 'need' to have done so? If that was a matter of necessity, then his free will is, to use the catchy phrase, 'fraught with ought', and he himself is not all that omnipotent (his choice was limited by a certain necessity to perform something, namely, to make the universe and man). If God is really absolutely free, why has he created the universe and the man the way they are? If he had created them exactly the way they are, then he must have had some reason for this, which fact *per se* questions his free will. Has God followed any end in creating the universe and man? If so, he does not then exercise the power of free will. With this in mind, Christianity assumes that God has created the man with a view to WHAT? **Another puzzle (or rather an inconsistency): Why has God, who is omnipotent, created Satan? What good might the devil be to the Almighty? God's ways are incomprehensible.**

Any one, were she all-powerful, would create the world and the man at least a bit differently. What kind of

world would I create if I were a hypothetical omnipotent deity willing to have in the heaven as many as possible sinless human souls? To start with, I wouldn't waste my creative potency on billions of stars and stardust as largely unnecessary luxurious accessories to this world. The latter, in its turn, is superfluously large for people truly to embrace and enjoy. The vastness of the world just unnecessarily distracts its children from the things they have been destined for. Again, I would not go to the bother of making a world that it had taken several billion years to evolve before man appeared. If I wanted to have innocent human souls in the celestial firmament to give me company, I wouldn't wait several billion years for this to happen. Contrary to God, I would go straight to making people. Now I would create the Earth and the world according to the notions entertained by the people in the fourteenth century Europe. In other words, the Earth would be the center of the universe, with the sun and the moon revolving around, and immovable stars just looking down upon us. In order to set people free from the trappings of historical consciousness relating to their own history and that of the world, I would create everything once and for all, on the model of the fourteenth century *status quo* (when the view of the world was relatively unanimous all over). And since it behooves God to be benevolent and good, I would arrange it for the people beyond the Polar Circle to suffer not from the cold, while for those living in the equatorial regions, from sultriness. Instead of being spherical, the earth created according to my blueprint would be flat as a board, and it could float on the water. In a word, I would make everything look like people used to believe it did a thousand years ago. The average temperatures on this flat Earth would be only oscillating between $+10^0$ and $+ 28^0$ Celsius. Moderate and even precipitation would never bring about either floods or drought. I would remove all the pathogenic bacteria and viruses to allow people to live without a threat posed by contagious diseases. I would curb people's

inflated egos and aggrandizement appetites in order to reduce the number of war conflicts. It would be helpful, too, to re-direct their narcissistic self-centeredness, to diminish their lecherous impulses and, thus, to have done with the proverbial 'shall not covet your neighbor's wife'. In order to slash suicide statistics, I would eliminate any possibility for chemical entities bringing on episodes of depression to have access to the human brain and play havoc with it, up to the point of suicide. In order to free people from toiling for mere subsistence, I would see to it that at the moment of their creation they have already been equipped with the twenty-first century technological gadgets. And, since I do care for people, I would also arrange for them not to depend so tightly on daily nourishment: People would, similar to plants, just draw energy directly from the sun and its warmth. If I were a God, I would, admittedly, want as many people as possible to revere me as their Lord. In order to promote this faith, I would regularly appear on prime time television, and communicate with my worshippers via radio as well. In case there were more competing gods, as part of election campaign they could have their hours in the media, therefore letting people have enough opportunity to know their divine candidates and to choose one worthy of their respect and reverence. Like in competitive democratic elections, you know.

Well, why should God really go to the bother of creating flesh-and-blood people and all the world around? If I were a God, I would, by way of streamlining the whole thing, skip over this and immediately set about making souls to populate the heavens. As many as I would like to and exactly the kind I would prefer to have around in my celestial proximity. Yet I cannot help wondering what the Almighty might need these souls for? Presuming that God is all-powerful and all-knowing, and embraces and involves all there is or can ever be, how do we explain the fact that He wants to have human souls high in the sky?

In the hands of God

"Thus no religion is one of love if it is not one of hatred, unless it is one of a kind completely different from those occurring through history. These are religions whose vocation is the preservation of society, conferring upon it extraordinary power over individuals."
– SERGE MOSCOVICI: DURKHEIM ON THE ORIGINS OF RELIGION

The evolutionary developed illusion of belief in gods is very likely to fall into oblivion in the future as unhelpful and even harmful. It will be more beneficial to have substituted for the old illusion of truth, 'We are in the hands of God', the new one. The most helpful replacement might be 'We all are in our own hands'.

The old saying, now falling into disuse, is a product of the brain's hardware and software. This historically instrumental belief was supposed to alleviate the integration of the brain with its body and the environment in order to secure the organism's reproduction. Over more than millions of years of evolution, people used to live as gatherers, hunters, and farmers. This lifestyle used to daily feed such a belief, moreover, it depended on it for survival. So, evolution has provided people with the illusion of the helpful God, and this notion must have so far proved reasonably handy. Today, though, people for the first time in their history have created effective and efficient weapons of mass destruction capable of annihilating all there is, including the very creators of the mortal armament. The impending threat notwithstanding, people still continue to behave and act as prompted by the authenticated genetic code. The difficulty is that the latter does change infinitely more slowly than the environment in which we find ourselves. At the level of the brain's lagging behind hardware and software, man is not aware of the

impending danger, i.e., of mass destruction weapons and the worrying globalization of power. These new realities, which have recently cropped up in the human environment, are still something the human brain has to take into account and to tune in to. For the traditionally tuned in hardware and software, this amounts to rising to a new awareness that these mass destructive weapons are not in the hands of God, but in ours. What our brain system will also have to come to realize is the fact that no supernatural power can guarantee us the positive course of the future evolution. Previous adaptive successes must not mean the future ones. It is up to us and on us alone to define the right avenue to follow. I hope that new illusions of truth (consensual truths) adopted by humanity will have no place for the supernatural, i.e., for someone beyond the material world to take care of us, to navigate us through dangers and, overall, to 'deliver' us from evil and demise. There is no hope of a guardian angel for generations to come.

To make a long story short, persistent reliance on the evolutionarily inherited illusion that there are gods there to provide humans assistance and guidance may in the future contribute, less or more directly, to the downfall of the Earth's civilization. A tenacious belief in the illusion of truth professing the possibility of after-life, again, may well lead to the conviction that the eventual annihilation of humankind is nothing to bemoan. Some might even suggest that, perhaps, it could be not altogether a bad idea – to have done with the spoilt world and its wicked tenants… Finally why should we really mind such a new 'holocaust'? The more so given that there is still there a possibility of eternal life (for 'us', the select)?

***

Pre-packaged existence: Genes and the Ten Commandments

"Communism lost in the economic battle with capitalism because it goes against the innate tendencies of human nature. In particular, it goes against the innate tendencies of the male gender who has dominated and influenced the ebbs and flows of commerce till the present day."
– WILLIAM A. SPRIGGS: EVOLUTIONARY PSYCHOLOGY, CAPITALISM AND COMMUNISM

On the authority of the Jewish Bible, or the Tanakh, God decided to reveal his will to Moses on the Sinai Mountain some 3,500 years ago [16] and through him proposed to Israel a final covenant whose terms are fundamentally moral. We popularly refer to it as the Ten Commandments. These are all kinds of commands about human relations. The XXII Congress of the Soviet Union Communist Party in Moscow adopted in 1961 the Communism Builder Code of Ethics [17] meant to provide model for comportment and action, fettering people with duty. Now a certain advertising agency produced, in the summer of 1998 (it was exactly then that I happened to see the billboard concerned), an exceptionally revealing advert for a perfume, *Pret a porter*, as part of its campaign targeted at conquering a responsive market for the branded product.

As you may see below, I have tried to match each of the divine commandment with a coextensive rule taken from the Code of Ethics. As the latter is much less known than the Ten Commandments, its lines are given in *italics*. Those who have not had the chance to be exposed to the advertisement for the perfume concerned have really nothing to regret. It resembles thousands of other representations promoting cosmetics that usually bear a happy, healthy, and lovely young woman (or a handsome

man with a staminal body), who is lasciviously gazing at a member of the opposite gender while addressing the recipients of the message: 'Would you like to have your skin fresh and fragrant? Would you like to look as attractive, happy, and healthy as I do? You may have all of these if…" *Pret a porter* with its revealing name (something like 'ready-cut for you to take along') promises the viewer to 'clothe her in its singular fragrance'. *Pret a porter, Pret a porter, Pret a porter … Pre-packaged, Pre-packaged, Pre-packaged…*

Now lets parallel the two texts and enjoy the affinities.

1. I the Lord am your God who brought you out of the land of Egypt, the house of bondage: You shall have no other gods beside me. You shall not make for yourself a sculptured image, any likeness of what is in the heaven above, or on earth below, or in the waters below the earth. You shall not bow down to them.

Commitment to the cause of communism, love for your socialist Motherland and for other socialist nations. Fellowship and brotherhood among all the peoples of the U.S.S.R., no compromise with the adversaries of communism, peace for the peoples. Fraternal solidarity with the working people all over the world.

2. You shall not swear falsely by the name of the Lord your God; for the Lord will not clear one who swears falsely by His name.

No putting up with those who infringe on public interest.

3. Observe the Sabbath day and keep it holy, as the Lord your God has commanded you. Six days you shall labor and do all your work, but the seventh day is a Sabbath of the Lord your God…

A keen awareness of your social responsibilities. Conscientious and dedicated labor for the common weal. Preserving public and social values, and contributing to their promotion. Commitment to team spirit, values, and mutual assistance.

4. Honor your father and your mother…

Mutual respect in the family, taking care of children and their upbringing.

5. You shall not murder. 6. You shall not commit adultery. 7. You shall not steal.

Decency and honesty, moral integrity and stamina, simplicity and modesty in personal and public life.

8. You shall not bear false witness against your neighbor. 9. You shall not covet your neighbor's wife.

Friendly and considerate interpersonal relations, and mutual respect among people.

10. You shall not crave your neighbor's house, or his field, or his male or female slave, or his ox, or his ass, or anything that is your neighbor's.

No putting up with injustice, parasitism, cowardice, careerism or greed.

What do the Ten Commandments, the Communism Builder Code of Ethics, and the *Pret a porter* perfume advertisement have in common? They do share one very essential property. In particular, all the three are powerful public opinion-shapers appealing to broad masses, and they are so by virtue of their ability to neatly convey and drum into our heads messages written in our genes. Actually guides to conduct, the three messages,

though, are the genetic imprints of merits relevant to primordial evolutionary victories, 'gut instincts', and long-gone psychological values. Between you and the advertised product you are supposed to come to crave, there's actually chemistry.

Contemporary science has managed to convincingly show that we are our molecules. For my part, I shall try to address this theme in the chapter on consciousness and bring home that lots of our personal traits have been genetically derived. These include such 'spontaneous' manifestations of psychological dispositions as affection, love between the two genders, conscience, a sense for justice and fairness, a sense of commiseration and compassion, a sense of courtesy and honor, and that of right and wrong. It is in appealing to these traits that the Ten Commandments, the Communism Builder Code of Ethics, and the cited perfume advert are in unison with the primordial language of our genes. Everything we now agree to has been okeyed by our brains hardware and software. The ideology and values of capitalism, of free market economy and their respective power relations also answer the principles ingrained in the human brain. Successful ideological leaders are those who have correctly put their finger on the values sanctioned by our hardware and software. This accounts for our ready identification with what they want us to believe in and give our support to. Most ideologies would wave the banner of justice, because this is a sure wave of sentiment to ride. The trick is that people have justice normally etched in their genes, therefore they would lend its contemporary proponents an attentive ear. Again, the majority of ideological doctrines would preach the principle of respect for life ('you shall not murder'), just because its prophets can be only too sure that most of their target audience have got this moral command deeply entrenched in their human essence, i.e., in their genes. The same applies to the employment of such universally accepted human values as freedom and love.

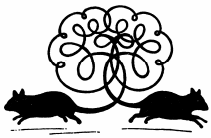
A healthy, youthful, and attractive look sold to us by ever-pervasive adverts as well relies on touching our genetic strings. And so on and so forth.

Today's commitment to capitalism as a political and economic social regime seem to match optimally with the dictates of our 'selfish' genes. Both capitalism and socialism make the most of their imperatives by way of getting our consent to their polices and commitments on the level of genes, as it were. The same holds for religions, cosmetics manufacturers and traders, and for beauty salons. A necessity to worship in itself seems to have been genetically encoded as well. Our ancient ancestors are thought of to have first admired the physically best developed and biggest male and female within their own midst. Then it was the turn of gods and other supernatural beings to be looked up to on the part of people, and today's humankind is engaged in gregarious celebrity worship. It is not unreasonable to suggest, on the face of the above, that the whole institution of Christianity could in the future put up with the non-existence of God in exchange of the Ten Commandments to be universally embraced as the main article of faith to put together people who refer to themselves as Christians. I was wondering whether the genetically recorded ethos of the Ten Commandments is effective and authoritative enough to reduce the soared crime statistics?

***

Chapter Four

Illusion of the Soul



"While reading sacred books, I sometimes feel the presence of the souls of those who have written them as well as of others who have sought relief in reading them."
– AN UNNAMED READER OF SACRED TEXTS

"Illusions we live by. Our self-constructed prisons."
– FROM THIS ESSAY'S EDITOR'S NOTES

'Soul', for the purposes of this book, will stand for what people across various denominational affiliations tend to believe in. With them, a human soul is something immaterial and eternal contained inside a human body. Something Koheleth, the chief editor of the Book of Ecclesiastes included in the Bible, hints at by remarking that God has put *olam* (eternity, mystery, and obscurity) into man's mind. The soul has been thought of to accompany humans in their corporeal existence, or life, and persist for ever after the body's demise. At least this is how worshippers across most religions believe it to be. Thus, I would suggest, the illusion of the soul falls under the category of illusory truths. Through this illusion the human brain has obtained a handy manual which makes the performance of the brain's intricate functions much easier. The soul explains away a host of questions to which the brain need not thus attend. The illusion of the soul is also capable of a 'Reward function' positive

activation (I shall pick up this at a later stage in this essay). Overall, belief in the eternal soul makes one feel good, irrespective of whether her true condition is or is not so. The only thing that really matters is that our brains Reward function has arrived at the conclusion that the belief in the eternal soul is highly beneficial for us and instrumental for our rulers. Well, my defiant soul has decided to avoid the trivial course. Specifically, after my body's death it won't fly skywards, but, rather, it will have been born anew somewhere over the Ural mountains in the south of the bleak and inhospitable Siberia, almost deserted by people, to the best of my knowledge. Curiously enough, my soul *will* have been born over there some 100,000 years *ago*. But I am not sure about the whereabouts, though I have often tried to find this venue on the map. (This is the sort of an illusion of truth recently entertained by my brain. I wonder how long it will prove tenable and entertaining.)

***

Difficulties with the soul

"But he who is awake and knoweth saith: 'Body I am throughout, and nothing besides; and soul is merely a word for a something in body.'"
– FRIEDRICH NIETZSCHE: THUS SPAKE ZARATHUSTRA

The notion of the human Soul, I am inclined to think, lacks substantiation, is in head on contradiction to certain clinical studies and, altogether, appears blatantly contentious. Let us take a look at some of the inconsistencies involved in its pretty thin arguments (with my apologies to all those who embrace the existence of the soul as a matter of faith).

First inconsistency. No matter how hard I tried, I could not find out any reliable account of the soul's origins. One has, in fact, three options to choose from:

i) God creates the soul each time an egg is fertilized, and He places it within the latter's materiality, or else God can make the soul at the child's birth and put it into the newly born body

ii) New souls are made automatically whenever new eggs are fertilized.

iii) There are many souls which belong to no bodies in this world, the number of souls in time, at that, is constant. After the fertilization of an egg, or following the body's birth, the soul would enter it to leave the body after the latter's death.

It may be instrumental to bear in mind that the thus conceived soul is something preternatural and immortal. The soul, thus, enjoys immortality like God himself does. Sure enough, after the death of the body, its soul becomes a carrier of the body's information-consciousness. The body's death, then, leaves the soul enriched and edified. There are those who will ask, "Given that the soul enters an egg following the latter's fertilization, what will happen to such soul after, let's say, either spontaneous or induced abortion"? Such a soul will certainly fail to carry any information about a human being. Is such a soul equal to the one which used to dwell in a body for some seventy-five years? What could such a consciousness-less soul do for the very, very long rest of its eternal existence? The allegedly omnipotent God must have foreseen this turn of events and arranged for such inconvenience. But how? It is beyond my understanding what God might have wanted for to have billions of souls around? How are they supposed to kill the endless time of their eternal endurance?

Second inconsistency. On average, the soul lives on about seventy-five years within some body while its

bodiless existence is endless. How, then, can one account for having so much stress placed on the soul's brief sojourn with a body – a part of its existence which must be pitifully negligible and insignificant relative to the eternal remainder of its incorporeal duration?

***

In God's shoes: Petri dish humanity

"Once upon a time there lived an ugly and selfish monster called Zeagot. No woman on earth wanted to have offspring by him. Zeagot, fancy you, wasn't altogether frustrated by this fact because he could reproduce by cloning. So he had many, many cloned children – equally ugly and equally selfish. As they were absolutely identical, the prolific father bothered not to invent names for them. He just called them MacZeagot 1, MacZeagot 2, and so on and so forth. Ad infinitum. *Needless to say, the little monster clones did not have a nice-smelling mother to kiss them good night."*
– COSMOPOLITAN MYTHS AND LEGENDS OF THE THIRD MILLENNIUM

Will mortal people ever be able, in a God-like fashion, to make human beings, complete with their 'immortal' souls? Though something of an affront to commonsense, the question could be answered in the positive. Yes, most probably, we will, and this trend may be difficult to combat. The advances in molecular biology and genetics have made it clear at this point that man – complete with all her developmental stages, her bodily and, in part, spiritual traits – is programmed and patterned all over. So, we are by no means creatures of chance. Every cell in the human body encapsulates a recipe for growing a complete human organism. This blueprint, as it were, is

housed in the DNA, or deoxyribonucleic acid, molecule. Now $1cm^3$ of this genetic material can host programs for over half million people. On having been fertilized, the egg is provided with all the necessary nutrients as well as with a mechanism indispensable for the development, growth, maturation, and, in line with the DNA program, for the inevitable death of a human organism.

People in molecular biology and genetics laboratories already know how to design a short DNA program and a genetic code for polypeptides. They have also devised a system capable of decoding such a program and of creating a polypeptide on the instructions of this program. DNA programs can be actually designed for any familiar protein to be then implanted into a living cell. The latter, guided by the implanted program, will 'hatch' the intended protein. Laboratories can even develop a DNA program for a protein which has not been identified in any living organism and then have it grown by a living cell. The latter will 'bring forth' the commissioned substance.

People already know how to effect changes to the genetic code of an organism or its DNA program. Such procedures have been around for several years. In following the appropriately modified genetic code, an embryo can develop, for instance, into a mouse with green skin, fluorescent in the dark. Further, fetal and embryological researchers have recently learnt how to split a single embryo and subsequently make each part develop into a living copy (a clone) from a singular cell of the donor organism (such experiments have been successfully carried out with mice and sheep). It will be possible in the future to implant the complete DNA program of a certain organism into an embryonic cell in order to have it eventually develop – without fertilization, but just through following the directions of the implanted program – a reasonably true copy of the donor organism.

Dolly the sheep is the first clone of an adult animal. Before long, in the summer of 1998, the announcement

came of churning out 50 clones of adult mouse. As I'm jotting down these lines, at the cusp of the second millennium (December 18, 1998), I can hear television news anchorman reporting experiments with cloning of a human being in a certain South Korean laboratory (for all that tinkering with human material is publicly frowned upon as such and in many countries legally prohibited or banned by scientific protocol). A time may not be all that distant when the lunchtime bulletin from a newsflash will break the news of a human copy genetically manufactured through human cloning techniques**. Just a human embryo clone similar to its more familiar animal counterparts – sheep and mouse clones.** What more, this fairly true replica of a human will be endowed with consciousness and display all behavioral patterns attributable to the rest of humans as a naturally evolved species.

Now let's imagine that in a few decades the complete DNA program of man will have been read. We will have learnt the specific responsibilities of separate parts of the program. Then the DNA program for humans will have been designed and the machinery of a living cell will have been used for cloning people according to this program. A human being thus cloned will feature her own consciousness, her twist of belief in a God (or not any such commitment), she will be not any different from other, conventionally born people. In a word, this will be a human created by another human being. What might be God's response to this shockingly new reality? Who will be responsible for providing a soul for a human being created by another human being? Given that the soul is immortal and supernatural, how will God come to terms with the fact that mortals are entitled to create something immortal and supernatural? Even Greek mythology with its daring heroes and demigods has failed to grant mortals such breathtaking, hair-raising and far-reaching prerogatives as we may expect to become true in a matter of a few decades. There are in principle no

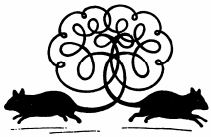
obstacles for contemporary science when it comes to human cloning. This is not to say, nevertheless, that all relevant technical and scientific details have already been seen to. Anyway, it is most likely that we will be able in the future to have commissioned a copy of our son or daughter, or any one else we would please to.

Letting our imagination even more loose, it is not at all inconceivable that a time should come when the human genetic code could be deliberately modified so that people are able to program any sort of a clone they only might think of. Grossly exaggerating, such a man-made human being could have no legs, but, instead, have three arms and two heads. What kind of a soul thus modified human being should have? Has the Almighty taken such tack into consideration? No sacred book I know of has ever dealt with awe-inspiring and bothersome questions like these. Well, just imagine a time when we have cracked the part of the program responsible for the code of the human heart. A human embryo (or an animal one) will be able, guided by these genetically stored instructions, to grow a heart. The heart thus arrived at could be used in transplants. By analogy, when an egg is impregnated with a program encoding the human brain development, a living being – either human or animal – will have 'brought forth' the human brain (complete with consciousness) which can be transplanted. Something like a spare parts factory, in effect. My question is: Where will then the soul reside? Which of thus 'programmed' organs will make its home – the heart, the brain or anything far less lofty?

***

Chapter Five

Materiality of Consciousness



"'You', your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules…"
– FRANCIS CRICK: THE ASTONISHING HYPOTHESIS. THE SCIENTIFIC SEARCH FOR THE SOUL

"*The unexamined life is not worth living."*
– SOCRATES

For this text, I will understand by consciousness (otherwise, like the mind, a conception with a long philosophical pedigree) an awareness of my own being-in-the-world (the existence of my self); a conviction that I exist within the outside world as a separate entity. It is due to the possession of consciousness that I can assess all what surrounds me and take decisions within the bounds of the world beyond my consciousness. Two approaches to consciousness have recently dominated the mind-body discourse. The proponents of the first would contend that consciousness has an unphysical basis (or at least that it *also* has an unphysical substrate). Such

insistence implies that consciousness of necessity involves some preternatural components. Those who share this opinion would ally consciousness with the supernatural soul. This belief makes up part of a wide-spread illusion of truth that stubbornly resists to recede despite powerful evidence to the contrary (some thereof offered below). Those favoring the other viewpoint would argue for the physicality of human consciousness. In this chapter, I shall elaborate on this approach, for the comprehension of the material basis of human consciousness thesis may be eventually all-important for the advance of the Earth's civilization. Being professionally involved in biophysics fundamental research, I am accustomed and committed to measurable physical evidence. Therefore, I shall endeavor to show, through making use of some of this, a 'flesh-and-blood' origins of our consciousness (and of our soul). My thesis is that, with its residence in the brain, consciousness is no less material than human blood circulation materialized within the physical system and involving the heart, arteries, and veins. In conformity with the science-popularizing approach of this essay, the description of the physical stuff and physiological processes underpinning human consciousness will be grossly simplified.

Consciousness is made possible due to a certain function of the brain's cells not yet identified. Guided by the cerebral hardware and software these cells process impulses incoming from various outer and inner sites, subsequently getting these off to definite 'destinations' within the human body. This is, in outline, how an individual's identity, or ego, or consciousness is created. Roughly, I am in one with those who favor the view that our consciousness or our 'self' is merely a set of electrical and chemical interactions between 'conscious' cells of our brains, and that consciousness has an exclusively physical basis [1 and 24]. The evidence buttressing this statement is so extensive and convincing that one is normally tempted to ask, 'How is it that people don't take

these things in a matter-of-course way?' There is no denying that every one must have had plenty of first-hand experience with the materiality of consciousness. This notwithstanding, many people might have had, without a doubt, encounters also with the supernatural in consciousness as part of illusory truths embraced by these individuals.

***

Issues and arguments

"We are survival machines – robot vehicles blindly programmed to preserve the selfish molecules known as genes. This is a truth which still fills me with astonishment".
– RICHARD DAWKINS: THE SELFISH GENE

On the authority of Richard Dawkins, author of *The Selfish Gene* [24], "…everything about life is a product of the evolutionary process and consciousness is ultimately a material phenomenon". By these words spoken at one of his lectures he meant that there hadn't been any consciousness before life. I see eye to eye with him, and my case for the materiality of consciousness is as follows.

1. When people or animals are asleep, they are known to have lost – entirely or at least in part – their consciousness. In other words, when not alert they have no awareness of either their own existence or of that of the rest of the outer world. This testifies to the fact that a physical system in charge of our consciousness would get disconnected during the sleep. Should my consciousness involve something more than its physical basis, I would be able to stay

conscious of myself and the surrounding world even while fast asleep.

2. A man and an animal are known to have lost consciousness after having been 'appropriately' hit on their head, i.e., they cease being aware of themselves and the world around. In all likelihood, the blow would damage some element of the system which is crucial for the operation of consciousness, rendering thus the whole network dysfunctional. An equally strong blow administered on my bottom wouldn't have switched off my consciousness. My bottom, on the face of this hard evidence, must have nothing in common with my consciousness. If consciousness were triggered by something beyond its physical substrate, I would stay aware of myself and of my immediate surroundings even following a strong blow delivered to my head. Should consciousness have some supernatural traits, it would be more than strange to get stripped of these following just a trivial physical blow.

3. Medical workers can easily 'unplug' consciousness for some while by the application of general anesthesia: certain physical substances known as general anesthetics (such as barbiturates or halothane) are employed in order to influence the brain as required. There is really nothing supernatural about this procedure involving certain chemical substances. If consciousness were supernatural in nature, it would be highly unlikely that doctors should be able to temporarily stop its flow at pleasure.

4. Comatose patients are known to have lost consciousness for a longer while and sometimes even for a few years. Coma is the consequence of the lowered or abnormal metabolic activity of the brain affected by either an oxygen shortage or some other

physical factors. So, again, there is altogether nothing supernatural about this clinical episode. It would be at best embarrassing for some sort of supernatural consciousness to be so heavily dependent on the brain's metabolism.

5. Strong narcotics, recently referred to as 'psychoactive drugs', can influence and alter one's self. They can significantly affect the way we estimate ourselves and judge the events of the world outside our heads. Longer ingestion of these drugs may irreversibly alter the molecular machinery of the brain, consequently bringing about considerable unwelcome changes to human psyche. Should our consciousness be something immaterial and preternatural, it would not be a slave to chemical entities. Many among us have had experience with the consumption of alcohol and its powerful influence on our awareness of our own selves and of the things around. It strikes me as highly ridiculous that the immortal soul should yield to some 200 ml of liqueur, say Fernet, with just 30 to 40 per cent of ethanol content, or should be lost in the world of hallucinations induced by less than one milligram of LSD.

6. Supported by clinical data from humans, we know that mental conditions are, in fact, disorders in consciousness that are either genetically determined or developed in the interaction of consciousness with its environment. Schizophrenia, anxiety disorders, maniac-depressive illnesses, and mental retardation are physical in origin, and some of these are curable. Clinical observations have shown that the consciousness in patients may change variously depending on the course of specific illnesses and on the efficiency of their treatment. It is hardly conceivable that supernatural consciousness could be genetically programmed. It's hilarious, to say the

least, to try and match the supernatural human soul with the genetic code.

7. It may happen that surgeons operating on the human brain disrupt some connections between neuronal cells, which is subsequently reflected in the changes to the consciousness of the patients who have undergone brain surgery. I do firmly believe that nothing supernatural can be severed by a scalpel. The idea of executing surgical lesions to the immortal human soul strikes me as yet more implausible (though I am at times inclined to agree that the soul can be badly 'scarred' by various adverse experiences).

8. Infectious diseases attacking brain cells are known to produce striking consciousness deficits as well. Clive Wearing used to be a recognized renaissance music expert until he contracted some cerebral infection that damaged a great many of his brain's neurons, particularly in the hippocamporal system. As the consequence of the contracted condition, Wearing lost the notion of the past. The world he lives in now is reduced to the instantaneity, and Wearing knows nothing of the past or the future. Every minute and every day of his life are spent under the illusion that he has just awoken from a deep sleep [23]. It does not hold water with me that viruses should be able to produce such dramatic effects on the immortal human soul. Anyway, no sacred text has ever addressed this sort of episodes that fly right in the face of the immateriality thesis. What would the world look like if we perceived it every morning anew, without the remembrance of the things past? Can you think of our 'supernatural' consciousness to operate unaided by memory which, in turn, is firmly rooted in its physical substrate?

9. Another case for the physical anchorage of our consciousness is, in my opinion, the fact that phenomena responsible for the loss of consciousness in humans equally apply to animals. Even narcotics administered to the latter produce in them the very same effects observed in humans. This circumstance has been widely exploited for carrying on experiments with psychoactive drugs first on animals and only afterwards on humans. A rat may fall into an equally severe depression as a human under the influence of depressants. It can get equally drunk out of its 'wits' with alcohol. This implies a very similar brain organization in animals and humans. This allows me to infer that should human soul-consciousness be supernatural, so would of necessity be that of animals.

10. Consider for a moment a possibility for consciousness to be of a nobler descent than its straightforward materiality insisted on by me. Once adopted, such assumption would entail an ability of our consciousness to exist and operate independently of the brain and of its body. Pushing the above suggestions a bit further, our consciousness could even antecede the emergence of our corporeal self. This would imply a possibility for humans to acquire an awareness of their own selves prior to their proper existence. I know no one with such sort of experience, myself boasting nothing like that either.

Let's assume, for argument's sake, that our consciousness is supernatural in nature and, for some unknown reason, it cannot get an awareness of itself before our birth. Such train of thought leaves us with just one plausibility to embrace: consciousness enters a body following the fertilization of an egg by a sperm. This, though, invites another question: What is the exact timing of consciousness joining its respective body? This definitely cannot occur before our birth because no one has ever

reported an awareness of oneself before her birth. The act must, then, take place after one's birth. In this case, we would have to acquire an awareness of ourselves exactly at the moment when consciousness is believed to have entered its pre-destined body. Since such phenomenon has not been observed as occurring in humans and we become conscious of ourselves and the surrounding world in a piecemeal manner (as our brains develop gradually and its software is modulated accordingly), the hypothesis of supernatural consciousness is doomed to collapse. It is the case, although some people would insist that at a certain moment in their lives 'something dawned upon them' letting an insight into matters formerly inaccessible or incomprehensible.

***

Tips for the bored mind

"They say the devil finds work for the idle hands, but who does for the idle minds, I wonder?"
– A PRISONER'S DILEMMA, DIFFERENTLY

One might assume that consciousness, once severed from information inputs, would be content to have a rest from the incessant flow of incoming data to be interpreted and sent further. Astonishingly, but the obstruction of information flows makes our consciousness feel ill, as it were. It is nowadays commonly assumed that the nature of our brain organization normally exacts a constant influx of data sent out by our sensory organs. These are 'munched and crunched', and then assessed in terms of arriving at survival-relevant conclusions employed in the control of our organism. When information flows become just trickles, the brain would display very chaotic activities, and us-consciousness tends to get bored first

and, later on, to normally suffer psychologically for the paucity of the incoming information. Every one must have had this sort of experience while queuing up at places with no access to new information or action opportunities (at a bus stop, while stuck in an elevator or on board a plane which won't take off), with their brain left with a very low amount of new information to process. All of us do remember how awfully nasty these times may be.

What is involved is that our consciousness has been evolutionary developed with a view to incessantly receive the information output processed by our brains. When such impulses won't come, our consciousness is unhappy and literally suffers. This accounts for our success in easily 'killing' the time by watching TV, playing table games, chatting, studying and, by and large, being engrossed in any sort of engaging activity. But while idling, we tend to perceive the time as awfully dragging on. A long-lasting isolation damages human psychological balance. So, preventing the inflow of electrical and chemical impulses travelling from the senses to our brains has long been exploited in prisons as a severe psychological punishment. At first glance, one might think that to be meted out some time in solitary confinement could be for a prisoner rather an asset than a liability. In a one-man cell she could have peace and quiet, and privacy to do what she pleases, without being watched or interrupted by the roommates. Curiously enough, quite the reverse is the case; such a prisoner would suffer from loneliness and the lack of outward stimuli.

This reminds me of my visit to the Alcatraz prison facility north of San Francisco, California, U.S.A. Until 1963, this compound used to house the U.S. federal jail for grave criminal offenders. Misbehavior used to be additionally punished over there in such a way that the offender was subjected to a few days of solitary confinement in a one-person cell maintained by the

prison facility. Something of a jail within a jail, you know. This small room was entirely isolated from the rest of the prison, with no furniture or electrical light at all. Even sounds could not penetrate its insulated walls. The food was given in such a way that the prisoner confined in the cell had no opportunity to meet anyone. The pressure exerted by this environment on the consciousness of the inmate was really severe. The prisoner's brain was literally starving from the lack of outward information which would normally come from the sensory organs. It is exactly from this deficit that one suffers most in terms of psychological burden. Several days of such isolation might prove severely detrimental to the brain function of the convict. Only those would survive it who could 'engage' their mind without depending on external props. In order to bear this severe psychological pressure, recollected one former Alcatraz inmate, he had to invent some kind of activity to occupy his mind or his tortured and bored brain. With nothing but the pitch dark around, he was thinking of some 'food' for his consciousness. So, he tore a button off his shirt, which he then used to hurl at the wall and, groping, to be looking for it all around the floor, centimeter by centimeter. What with complete darkness shrouding the cell, he used to be busy searching for the button for hours on end. Once he found it, he repeated the challenging game again. Over and over again during the whole week of his incarceration.

The dependence of our consciousness on the influx of information from the world beyond it also unambiguously backs up the thesis of its material basis. Were our consciousness or the soul supernatural in nature, it would hardly had fear of darkness or isolation as imposed by the Alcatraz prison authorities. Materiality thesis of our consciousness is also supported by the fact that our brains tend to preferentially process information congruent with its historically honed hardware and software. Since the brain possesses well developed systems for processing images and sounds, it prefers

handling these types of signals. 'Sights and sounds' are today lavishly supplied by television and radio, and many people make the most of this. While you are watching TV, your brain is engaged in interpreting relatively simple information, which oftentimes spares it some more discomforting thoughts. Should it be permanently occupied by images and sounds coming from television, it might even get out of the habit of thinking independently at all. It is quite noteworthy that when the brain lacks information to digest and interpret, it but seldom turns to learning a foreign language, to solving mathematical equations, or to trying to discover a cure for cancer or for AIDS. Only very few among us could boast a type of hardware and software which gets the brain to process more demanding information. Given that our consciousness is supernatural in character, it wouldn't give preference, may I venture a suggestion, to watching TV over solving the scientific riddles of molecular biology.

***

The Creator's pet dethroned

"Yesterday, I, the most advanced programmed biological machine ever, had to wage a tooth-and-nail battle – hours-long but unsuccessful – with a pretty primitively programmed other biological machine, a mosquito. I was using widely tested tricks. I switched off the light and pretended to be asleep, waiting for the malefactor start buzzing. Once I heard the hated sound, I tried to reach the offending insect with a towel, aiming at somewhere in the direction of the buzz. This done, I right away switched on the light with the intention to finish the mosquito off, should the need occur, with another blow. Needless to say, I was a failure. While examining the bitten spots on my body in the morning, I kept asking myself a question, Who has proved more efficient and more intelligent in this

tournament? What kind of consciousness does this nagging insect have? What kind of free will and which certainties have enabled the bloody mosquito to survive and win the battle with the paragon of all creation – a Homo sapiens sapiens?"
– A SMALL NOCTURNAL DRAMA WITH A HAPPY ENDING

People tend to be pretty reluctant to admit the thesis of the physical basis of their consciousness. Why is that? For a simple reason of loathing to step down the ladder of values they have themselves established when it comes to their own species. In the context of instrumental illusions of truth, it must have been, at one evolutionary stage, more beneficial for humans to believe that their species is much more than the rest of living organisms with which they shared the planet of Earth. The notion that man is qualitatively superior to the rest of living creatures is the product of several millennia. This message is expressed in human cravings, joys, and sorrows as well as in people's affections and sympathies. Man's uniqueness has been glorified in artworks and technological creations. It stands behind magnificent architecture and the magic of music. The singularity argument has been ever whispered to people by finest authors of the past and present, and by film and stage directors, too. All have been trying to persuade man, explicitly or implicitly, that she is much more than just a neuronal network of the brain. The idea that human thoughts and lofty emotions as well as artistic and technological achievements of humankind are just the outcome of the electrical and chemical interactions of the brain neurons seems to people as sort of humiliating. Only with difficulty people have come to put up with the idea that everything humankind has created is merely the consequence of the physical brain's function, not the workings of some kind of spiritual force filling humans. What people vehemently

reject to put up with is essentially the thought that if everything what is has its ultimate source in the physical substrate of the brain, then there is no problem to devise a machine able to perform all the sophisticated things once attributed exclusively to humanity. Furthermore, such a machine may be much better at it than people used to be.

Anyway, several times in the course of its recorded history humanity has had, however unwillingly, to step down the stairway of notions of their own make, which used to fix the status of the Earth's people in the world. The whole Christendom was literally shocked when the Polish astronomer Nicolaus Copernicus (1473-1543) published his book *On the Revolutions of the Heavenly Bodies* (1543), which he, being an ecclesiastic, dedicated to the Pope. In outline, the book promoted the heliocentric theory, and the author pronounced that the Earth rotates on its axis and, along with the other planets, revolves about the Sun. But the previous commonly shared and unquestioned belief of the whole Christian world used to place the Earth, not the Sun, in the center of the universe. It used also to be thought that the Sun, the Moon, and a couple of other planets were turning around the Earth, while the stars remained fixed. Since the Christian community used to believe, and keeps doing so, that the universe had been made by the Creator, complete with the Earth as a special retreat for a man to live, it was not all that illogical to assume that the Earth was the center of the universe – while the Sun, the Moon, and the stars had been created just for the benefit of humankind. This high status of the Earth within the vastness of the universe had to support the notion of Creator and the creation myth. The exceptional position of the Earth among the many other planets must have persuaded humanity that they were as well unique. Well, it seems that not only Copernicus has driven a nail into the coffin of Aristotelian cosmology, but he has undermined, past recovery, the notion of the human

uniqueness. The dethronement from the top of the evolutionary staircase was as much deep-going as irreversible.

Reponses coming off from many notable figures of the day show how grudgingly people abandon the deeply rooted notions of cosmic significance of their own species explicated by the Old and New Testaments and, consequently, ascribed by people to themselves. The historical examples of the feedback to the Copernican heliocentric theory quoted below have been taken from Bertrand Russell's *Religion and Science* [5].

Luther: *'This fool wishes to reverse the entire science of astronomy; but sacred Scripture tells us that Joshua commanded the sun to stand still, and not the earth.'*

Calvin: *'Who will venture to place the authority of Copernicus above that of the Holy Spirit?'*

The Jesuit father Melchior Inchofer: '*…the opinion of the earth's motion is of all heresies the most abominable, the most pernicious, the most scandalous; the immovability of the earth is thrice sacred; argument against the immortality of the soul, the existence of God, and the incarnation, should be tolerated sooner than an argument to prove that the earth moves.'*

Theologians, Cardinals and Archbishops pointed out that 's*ince God does nothing in vain, we must suppose the other planets inhabited; but can their inhabitants be descendant from Noah or have been redeemed by the Saviour?…'* A further doubt liable to be raised by the objectors, they dreaded, was if humanity were not the purpose of all the universe and life, there probably had not been any at all. Inquisition, consequently, took up astronomy and arrived, by deduction of certain texts of Scripture, at two important findings*: 'The first proposition, that the sun is the centre and does not revolve about the earth, is foolish, absurd, false in theology, and heretical, because expressly contrary to the Holy Scripture … The second proposition, that the earth is not the centre, but revolves about the sun, is absurd, false in philosophy,*

and, from a theological point of view at least, opposed to the true faith.'

Today nobody doubts that Copernicus was right, and no one challenges his theory. And yet, for about two centuries following the publication of his upsetting book, the Christian Church branded the Copernican theory as heretical and forbade to teach it as a true account of the universe in all educational establishment its influence could only reach. The lingering ban (books teaching that the Earth orbits remained on the Index till the mid-nineteenth century) was not lifted despite the fact that most astronomical authorities of that day accepted the theory.

Another severe blow to human centrality and superiority was dealt by the evolutionary theory advanced by Charles Darwin (1809-1882). In his breakthrough book *On the Origin of Species by Means of Natural Selection* (1859), he provided a scientific explanation of the evolution of life on earth and, consequently, further trivialized humans. In his account, humans and primates shared one and the same ancient predecessor from whom they descended through the operation of the grand principle of evolutionary selection. The Church was shocked by Darwin's evolutionary theory. Bishop Wilberforce hastened to point out that *'The principle of natural selection is absolutely incompatible with the word of God'* [5]. Theologians would argue that people could not have evolved from the ape, as they *'have immortal souls, which monkeys have not; that Christ died to save men, not monkeys; that men have a divinely implanted sense of right and wrong, whereas monkeys are guided solely by instinct'* [5] etc. In the book *Are We Unique* [18], James Trefil quotes the opinion of a Victorian Lady: *'Let us hope that Mr. Darwin is wrong [about humans being related to apes]. But if he is right, let us hope it does not become generally known.'*

Under the load of scientific evidence, the secular world finally yielded and adopted, by and large, the

evolutionary approach to the origins and development of humanity. Almost all over the world, children are taught this theory at school. Even Christian Church seems to have grown of age and matured to sanction this materialist account of humanity's development as adequate.

***

The voice of the evolutionary psychology

"Man is a marvelous curiosity."
– MARK TWAIN: [SATAN'S] LETTERS FROM EARTH

Inquiries into human behavior have recently become the preserve and job of a modern discipline called 'evolutionary psychology'. It seeks to explain through universal behavioral mechanisms why humans act the way they do. It claims that people's brains do possess special knowledge that helps them adapt to local environments. The brain has specific algorithms that have evolved from our ancestral pasts and enable us to adapt to all particular situations that we, humans, now face. The evolutionary psychology seeks answers to the question how the human brain, hence human emotions as well, have evolved. Once we know how such traits, dispositions and mental states as ethnocentrism, prejudice, superstition, hate, and anger are controlled, we shall be able to go about altering these adversarial behavioral patterns. The evolutionary psychology comes up with a series of helpful clues and hints. It may well be that the old genetic code compels us to hoard money and property, as well as collect scalps, images and stamps similar to the manner in which our early forerunners used to pick up everything edible over one million years of the gathering civilization. The better collector an

individual happened to be, the more chances for securing her own reproduction she had.

It is equally most probable that we are forced by our ancestral genetic code – there used to be strong selective pressure for co-operation and shared views – to be fans of an athlete whom we actually have never met. I'm left gasping by the enthusiasm making fans on the left side of the stadium shout their heads off in order to encourage 'their' football team dressed in white as they struggle for the prevalence over another team – attired in pink sportswear. The endorsement is so sincere and vigorous as if it were a matter of their own survival. The same passions reign among the fans on the right side of the stadium, who do their best to encourage the team wearing pink. The fans on both sides in earnest crave a victory for their favorites, though the outcome of the game has, in fact, no impact on their practical life. Indeed, why should I, too, be keen on someone's winning out against her competitors in tennis, in Formula 1 racing, or in downhill skiing? Why should I follow sport events at all? If it had been some tens of thousands of years ago, I would have supported one of my folk in his chasing a deer. I would have wanted him to kill the animal. I would have been yet more happy about the victory of my team over a mammoth. Or else, I would have wanted a victory for my tribe if, dressed in thick skins, we had been waging a life-and-death combat with a rival tribe – wearing yet thicker skins. But to be led – today! – by the outdated instructions of my ancestral genetic code and be satisfied by the guesses of yesterday imprinted onto my gray matter by evolution, is absurd and humiliating, to say the least. Our ancient mind actually edges us for actions that make no sense outside the cave and beyond tribal ethos (when there used to be strong selective and survival pressure for in-group co-operation or cohesion). It turns out to be at odds with the budding integrative and co-operative values (at a time of increasing inter-group alliances). Whether the

laws of the evolutionary psychology hold any water or not has not been much discussed, and most humanity knows almost nothing about these regularities. The evolutionary psychology is being much less promoted than sport events, world fashions or the images of top 'celebs', popular singers and top models. This is a pity, though, because the comprehension of its principles may significantly contribute to the enlightened advance of human individuals and humanity at large.

With only consciousness-soul-mind left for man in support of her claim to a special place at the top of the evolutionary stairway, it is not easy for humans to give up the last attributes of the claimed uniqueness within the animal kingdom. People will not be easy to persuade to step down the stairway onto the firm ground and join the rest of living entities populating the planet of Earth. And, into the bargain, to take it for granted that they are merely programmed – if subject to change – biological machines at a certain level of complexity. Yet this being so, humankind would have benefited from such a revelatory 'fall'.

People, without a doubt, do have certain *special* characteristics distinguishing them from animals. These, however, are unequivocally physical in nature. Let's catalog some of these: Man has occupied most of the Earth's space at the expense of other species. As the only one among animals, man has a social program, a lot of charities and terrorist groups. The members of this species can laugh, rejoice and enjoy themselves. Over the course of their history, humans have intentionally killed more living creatures than any beast of prey as a species. In order to curb their own license, people – unlike animals – have imposed ethics upon themselves to contain their willfulness and reduce their freedom. With the intention to secure justice and democratic rule, people have made laws by putting together lots of paragraphs. The members of this species are wont to take a shower,

trim their nails, and save other lives without expecting any reward. They often have to get up early in the morning, though they loathe the idea, and spend eight and something hours a day at work they frequently do not particularly like, to put it mildly. Man has a well developed sense of belongingness, which he shares with her folk. She can also experience affection and friendship, and is distinguished by a capability of extending help with no expectation of reward. She does realize that she is smart. She would eat even when not hungry, and drink when she really needn't. People have built large cities they would now and then leave to take a rest in the country. They succeeded in making use of their genetic inheritance and intelligence for influencing human spirit and turning individuals of their own species into a 'bewildered (and lonely) crowd'. A human can dope herself up with man-made legal narcotics which help her cope with depression. She can create a kind of music that can release more opiates into the brain than amounts found in a bat which catches the ultrasonic signals associated with the presence of food. Her self-awareness levels are quite high, she is fairly successful in solving the riddles of the universe and can be sometimes driven to a suicidal end. Obviously, a *curiosity* within the animal kingdom.

***

Descending to the basement of human consciousness

"It would take Alice long to recount to you all the wonders she encountered if she visited the Empire of Brainland."
– ANONYMOUS BRAINLAND'S INHABITANT

Despite extensive on-going explorations of the brain function, it will take us long to discover the essence of consciousness. For more information on this, may I refer you to the bibliography at the end of this essay where you can find a number of specialist and popular texts of considerable interest. Web sites are other opportunities for easy access to the information on the subject. It is not the ambition of this book to take stock of what has been discovered about the brain function so far. I shall only try to describe as lucidly as possible – but sparing the reader technical details – the impact of psychoactive drugs on our consciousness and on the workings of the human brain at large.

Like any other human organ, the brain is composed of cells of two different types. 'Neurons' are responsible for the transmission of information, while 'glia' are ancillary cells supporting the activities of the former. Each neuron has its primary input system for receiving signals sent off by other neurons as well as its output system, through which it gets off the processed signals to adjacent neurons. The information is propagated all over the neuron in the form of electrical signals, while its transmission to another nerve cell is the responsibility of chemical substances called 'neurotransmitters'. These can considerably affect the functioning of the downstream neuron, realizing thus inter-neuronal information transmission. Individual neurotransmitters, which are more than fifty, act as keys that fit 'locks' (receptors) placed on the membrane of a neuron and then initiate

changes in the operation of individual nerve cells. The brain cell, or neuron, receives various signals which would come from hundreds of thousands of other neurons it is connected with. The neuron processes the incoming signals and, on having assessed the result, sends electrical signals to further scores of thousands of neurons. **This is the way ten billion neurons exchange information within our bodies, and their interactive network makes what is referred to as 'self" or what is our feelings, cravings, thoughts, our free will, beliefs, and the whole world as we know it.**

That neuronal contacts indeed determine what we are and what we feel, is given strong credit by the effects of psychoactive drugs exerted on 'us', or our consciousness. It has been already known for some time that these substances influence the communication processes among neurons, through mainly affecting junctions connecting nerve cells. The processes involved here are chemical ones [19]. Graphic and revealing recollections of people who share their experience of ingesting psychedelic drugs add yet more weight to the contention that the 'self' is defined by the quality of contacts between neurons.

This is how Aldous Huxley, an ex-poet turned philosopher and author of the *Brave New World,* describes in his *The Doors of Perception* typical sensations experienced after having taken in the psychoactive drug mescaline: '*To others again is revealed the glory, the infinite value and meaningfulness of naked existence, of the given, unconceptualized event. In the final stage of egolessness there is an obscure knowledge "All is in awe – that Awe is actually each". This is as near, I take it, as a finite mind can ever come to perceiving everything that is happening everywhere in the universe.'*

Now comes Solomon H. Snyder's account of the effect exerted upon the brain by lysergic acid diethylamide (LSD) known as an extremely potent hallucinogenic drug

[19]: *'…extraordinary is the ineffable change that takes place in the user's sense of being at one with the universe. This transcending of ego boundaries is experienced by almost everyone who takes a psychedelic drug. I recall muttering to myself again and again, All is one, all is one … Of course, dissolution of the ego, loss of one's sense of self, has its dangers as well as its attractions. A loss of ego boundaries is one of the hallmarks of psychotic disintegration, according to psychiatric dogma. In my own case, the powerful feeling of oneness with the universe was followed by a loss of awareness of just who I was. I began to call out, Who am I? Where is the world?' The sense of time is likewise markedly distorted. Two hours after taking the drug, I felt I had been under its influence for thousands of years. The remainder of my life on the planet Earth seemed to stretch ahead into infinity, and at the same time I felt infinitely old…'* Snyder also mentioned the change in perceiving time and space: '*When I tried to play the guitar, every quarter note seemed to linger for a month... The sense of space is altered, too. I remember walking from one room to the next with a feeling of having crossed the breadth of the universe. I climbed the stairs to the second floor and looked back down on events that were surely taking place 400,000 miles away.'*

G. Wasson writes in similar terms about a state of 'ecstasy' [20]: *'In his trance the shaman goes on a far journey – the place of the departed ancestors, or the nether world, or there where the gods dwell – and this wonderland is, I submit, precisely where hallucinogens take us. …When you are in a state of ecstasy your very soul seems scooped out from your body and away it goes. …You may visit Hell or the Elysian fields of Asphodel, or the Gobi desert, or Arctic waste. You know awe, you know bliss, and fear, even terror. Everyone experiences ecstasy in his own way, and never twice in the same way. Why?'*

A. Hofmann, who synthesized LSD in 1943 and ingested less than one milligram of the substance, tries to capture his response to the uptake of a chemical capable

of bringing about profound mental changes to our perceptions. After experiencing the state when one steps out of the confines of normality, he reported this [19]: '*even worse than the demonic transformation of the outer world where the alterations that I perceived in myself, in my inner being. Every exertion of my will, every attempt to put an end to the disintegration of the outer world and the dissolution of my ego, seemed to be wasted effort. A demon had invaded me, had taken possession of my body, mind and soul. I jumped up and screamed, trying to free myself from him, but then sank down again and lay helpless on the sofa…. At times I believed my self to be outside my body, and then perceived clearly, as an outside observer, the complete tragedy of my situation.*'

The invoked examples are pretty unambiguous in terms of illustrating that our consciousness is helpless against the influence of several micrograms of LSD or of any other psychoactive drug. LSD can entirely alter the interaction between brain neurons, most probably, by inhibiting, exciting or re-directing important impulses. As a consequence of these modifications, our consciousness comes to realize things that are not immediately geared to reality. Now imagine, if you will, that all people on our planet are permanently under the influence of LSD. How then could organizations resting on the concepts of illusory truths and beliefs, particularly belief in God, operate? How could the hierarchical edifices of religions, nations, sects, or political parties remain functional? What would professional soldiers – trained to follow orders first and only afterwards to complain about their inadequacy – do? I cannot think of any possibility for all the cited organizations or professional groupings to act along their customary lines. Nothing that relies on organized consciousness could endure, it would lose any sense.

What is stronger: our faiths or LSD? What can affect the communication between neurons more perceptibly, a faith or an LSD ingestion? By all means, the latter. How

can it be, then, that all our civilization would go to pieces if, under the influence exerted by some physical substance called LSD, our brain hardware and software underwent definite changes? This is only conceivable given that our civilization rests on the material basis of our consciousness. Further, this is conceivable because man, like the other members of the animal kingdom, is just a programmed and programmable biological machine. The differences claimed by humans are rather a matter of sophistication and complexity than of kind (they can be coextensive with divergences found, for example, in a grass mower, a Skoda Felicia car, and a space shuttle Discovery).

***

Finally some answers

"I, Homo sapiens sapiens, am just a programmed biological machine, amenable to further programming throughout my entire life span. Some of the programs I operate under are fairly modern whereas others, my ancestral inheritance, are a million years old. What makes me special among the rest of the biological machines inhabiting the planet Earth is my capability of self-programming. That, though, does not render me free from being constantly co-programmed by other agencies. My parents and acquaintances were the first to try and do the job. They were in due time joined by my school mentors and priests of my church and friends of mine of both genders. Then I came to be exposed to such powerful artifacts as books and mass communication media with their easy entry to human consciousness. This is roughly how I have been daily programmed and my own illusion of truth has been manipulated through the incessant information inflow. I have been indoctrinated by targeted programs of domestic propaganda as well as by the

brainwashing broadcast from such western radio and television mass communications institutions as Free Europe, Voice of America, CNN, and the local U.S. influenced television channel Markiza. In an effort to prevent the propagandistic bug from affecting my brain's software too severely, I try, on the one hand, to self-program, on the other one, to control the attempts of others to manipulate me."
– FROM THE MEDITATIONS OF ONE PROGRAMMED BIOLOGICAL MACHINE

Acquiring the awareness that our consciousness rests on a physical base, i.e., that we are just programmed and programmable biological machines will be a positive feedback, as it were, of far-reaching implications for our species. With a firm footing in the materiality of consciousness and equipped with scientific methods, we can search for answers to the questions of faith, the soul, our behavioral patterns, free will, and, by and large, of humanity's future. We mustn't be afraid of screening the processes underlying the functioning of our consciousness. People must know everything about how they are programmed and how they can self-program their inherited – and largely treacherous – machinery. Once we learn exactly how we are programmed, we will obtain an opportunity to overcome the outdated instructions no longer helpful in leading fulfilling lives (and oftentimes clean harmful to modern people). The challenge we face is to seize the control of our evolutionary potential into our own hands because the positive outcome of history is not guaranteed. Friedrich Nietzsche's neat "God is dead' has made it more clear than ever that whether humanity will be progressing or regressing is largely on us. Previous adaptive success must not be an asset for the future well-being of our species. (Suffice it to think of tremendous moral dilemmas involved in genetic engineering). The filters

through which we perceive the world might prove straight harmful in the future. To help guide the progress of evolution we have to augment the areas of order and harmony, not those of self-destructive indulgence resulting in entropy.

Materiality of consciousness thesis answers many lingering questions. Take, for example, these.

How are we going to learn what consciousness is?

Similarly to the way in which we have managed to unlock a great many of enigmas surrounding us. I have in mind experimental measurements relying on scientific laws rather than on philosophical considerations. If consciousness is physical in nature, then there is no other way of discovering its essence than by means of tangible measurements. All we have so far learnt about the Sun, the Moon, and the rest of the universe is the result of physical experiments and measurements we have applied to these physical objects in conformity with physical laws given by science. In doing so, we have learnt, for instance, that the Sun burns hydrogen into helium, releasing thus light and warmth so vital for human life. Every second this luminary burns 600 tons of hydrogen, and it has enough of this chemical to issue the light for about 6 billion years more. At the same time, philosophical considerations regarding the Sun, the Moon, and the universe have over our long intellectual history given us no factual information to rely on in practical terms.

Philosophical interpretations of the physical basis of human consciousness need to take into account and make use of state-of-the-art scientific advances. It is commonly known that outstanding philosophers of the past, such as Socrates, Plato, Aristotle, Saint Thomas Aquinas, Rene Descartes, John Locke, David Hume, and Immanuel Kant would be even today perfectly at home while discussing ethic issues as well as the questions of God, the soul or consciousness. That is to say, where it comes to

disciplines working with abstractions and generalizations. In the same philosophizing tenor, we could easily join in the distant future discussions held on the essence of consciousness.

Contrary to that, brilliant scientists of former times, e.g., physicists, mathematicians, astronomers, and natural scientists (such as Archimedes, Pythagoras, Isaac Newton, Nicolaus Copernicus, Hippocrates or Carolus Linnaeus) would not be able to discuss current issues in their respective disciplines or, let's say, deliver university lectures. They would hardly be able to understand what is going on in their branch of science because these have changed beyond recognition [R. Dawkins]. Every day brings new findings across the entire field of natural sciences, and scientists discover new regularities and laws – straightforward, measurable, and verifiable. In other words, one cannot just philosophize about the brain and consciousness without recourse to most recent accomplishments and advances in related research and technologies.

***

A machine to match humans

"The human being is a machine. An automatic machine. It is composed of thousands of complex and delicate mechanisms, which perform their functions harmoniously and perfectly, in accordance with laws devised for their governance, and over which the man himself has no authority, no mastership, no control."
– MARK TWAIN: LETTERS FROM THE EARTH

Shall we ever be able to make a machine to match a human being? In principle, yes. I see no reason why not. We should start the job of creating a new type of

consciousness by mimicking nature. We may first make a human being via cloning techniques. In having performed this, we shall have simultaneously created connections of neuronal networks which repeat what we have in the natural human brain. Following this procedure, we shall arrive at something that resembles humans, complete with their consciousness, but, at the same time, this something is artificially created. Then we shall have to translate the genetic code of man, to identify which parts of it are responsible for the production of the brain with its input and output systems, and, finally, to clone just the brain and the part of a human organism which interacts with consciousness. Thus the artificially created brain will feature consciousness which will become aware of itself and will be able to communicate with us (even, perhaps, to make fun of its own quaint status and crack jokes at our expense). In the first stage of consciousness research, we shall arrive at the laws controlling its operation. A genetic code will have been prepared, which will be able to selectively code certain states of consciousness, such as friendship, love, doubt, superiority, craving or a will to power, among others. This is how we may clone a machine with purposefully modified consciousness. (That is to say that we, programmed biological machines capable of cloning ourselves, could be justifiably called 'primary Programmed Biological Machines', while our clones could be logically referred to as 'secondary Programmed Biological Machines' – secondary PBMs. Naturally, secondary PBMs will be trying to produce, by cloning, tertiary PBMs, and so an. In other words, they may finally find the sense of life in producing mutants).

Yet this can only come true when consciousness has stopped being a mystery to us, likewise the Earth, the Moon, and the Sun, which have been demystified owing to the discoveries accomplished in science. We have already solved the riddle of the Sun, and every primary student can explain why it issues light and heats Earth.

Such diseases like pneumonia, influenza, and malaria are no longer mysteries for people, either. As well as fertilization, a programmed development of a living creature, and, in the near future, even a controlled death of a cell.

***

Computers vs. people

"The other day, there was a virus in my brain's software and in my computer's. I stayed in bed, running a temperature and feeling very exhausted. Only God knows how my computer felt."
– FROM THE PARABLE OF A VIRUS INFECTED COMPUTER

The computer is actually a pretty primitive electrical-mechanical machine with hardware and software responsible for all its functions; computer's equipment remembers the program and obeys its instructions. So, multiple functions fulfilled by computer depend not only on its hardware, but also on the program on which it is run. The computer is made operational through responding to the commands of its program. When there is something wrong with the computer's hardware and software, the machine starts being chaotic, it tends to get stuck or just won't work.

Man, who is a complex programmed biological machine, also has her hardware and software housed in the head. This brain equipment is also in charge of all functions, it remembers the program and obeys its instructions. Variety in human behavior is contingent on the quality of the interactive program governing by a given individual. In case there's something wrong with

the hardware or software of the brain, a man starts to behave chaotically or would get stuck, or would not function at all. One can encounter people with such dysfunctional brain hardware or software in lunatic asylums and prisons. This type of mental disturbances are treated by psychotherapy and medicinal preparations, with more or less success. Medicines for the cure of the brain hardware or software conditions are plentiful, and they can be very helpful. A complete recovery, though, is not warranted.

Will the computer be able to substitute for man? By all means, on condition it is designed on the functional model of the human brain. There are several requirements, however, such a computer will have to meet. One among them is, for instance, that such a computer should not be absolutely accurate, it should make mistakes ('to err is human'!), occasionally confuse inputs and outputs, have a changeable memory as well as it should have no scruples about guessing the lost data. I cannot but agree with many authors who maintain that the organization of current computers has very little in common with the functional organization of the human brain. Actually, there is no need to substitute a computer for a man. It will be much simpler to replace people with their cloned copies.

We'd rather pose this question differently: Will it be possible to build sometime in the future a machine which will combine human consciousness and the advantages of present day computers? In principle, yes, yet the future to be reckoned with is very distant indeed. At first, we have to take at least the very first step, and this suggests extending every effort towards understanding ever better the workings of our brains and the processes involved in the creation of consciousness. One mustn't eschew from learning and accommodating the unbiased reality about man: she is just a programmed biological machine, and its essence cannot be properly explored unless we stop being phobic about really knowing it.

Putting up with the raw fact that humanity is nothing more than programmed biological machines still continues to be taken as sort of humiliation and impropriety even today (when no more than just 20 per cent of the world's population are agnostics and declare their non-belief in supernatural forces). This notwithstanding, we are in a far much better circumstance today than great Galileo, the brilliant scientific figure of his day, whose experiments and mathematical formulae confirmed the Copernican heretical hypothesis. In 1610 Galileo turned the newly invented telescope towards the heavens. This was to become the beginning of his personal undoing and of the refutation of the sanctioned theory of the cosmos, in which the Earth was the center of the universe. As is commonly known, twenty-three years later the Church would accuse Galileo of heresy for his scientific views. Then enfeebled by illness, he was caused to publicly recant (actually, to commit perjury) and, *on his knees*, recite a long renunciation formula drawn up by the Christian Inquisition: 'I abjure, curse, and detest the said errors and heresies ... and I swear that I will never more in future say or asset anything, verbally or in writing, which may give rise to a similar suspicion of me.' [5, p. 41]. Galileo lived out his life under house arrest, but the old system had been damaged beyond recovery.

***

'Other minds' and the problems of access

"What is it like to be a bat?"
– THOMAS NAGEL: MORTAL QUESTIONS

The problems are huge, if anything. They seem even insurmountable. Given that consciousness rests on a

physical base, it is probable, then, that somewhere else in the universe there may emerge 'other consciousness' with a material substrate. This 'other consciousness' might perceive its own self and the world beyond widely differently from how our consciousness goes about it. Moreover, the basis of this 'other consciousness' may not be biological or chemical at all. One cannot rule out that certain states of matter, through reciprocal interactions and information transfers between elementary particle-quarks, may create their own consciousness (of course, they will be aware of things that are different from those we are conscious of, and which will be entities at a different level). Some kind of consciousness may also emerge as the consequence of interactions between electromagnetic and gravitational waves following certain processes running in the universe. One can think of plenty of possibilities which could create prerequisites for the appearance of 'other minds'. Our body and 'us' are actually programmed machines with chemical and biological basis. Our consciousness rests, in fact, on the complex set of pretty mediocre cells amenable to damage, spoilage, and aging. It is reasonable to suggest that some other system of consciousness, based on, say, 'pure' physical interactions may be not so vulnerable. It may never age or go wrong. Thus constructed consciousness could be capable of self-organization, hence it could be immortal. It may well turn out that our consciousness will be very primitive against 'other consciousness', which could be the consequence of infinitely higher number of interactions and mnemonic components involved as compared with the limited number of neurons in the human brain. Again, the hardware and software of 'other consciousness' can be manifestly more complex and qualitatively much higher than ours.

Our consciousness may be just one form among many other possible ones, and some thereof will perhaps remain for ever inaccessible to our primitive consciousness – too low -leveled and too coarse to be able

to recognize and appreciate its finer and more complex counterparts. The consciousness of a fire-fly, by way of comparison, its view of the man's and the universe's origins is widely divergent from what people themselves think of their coming into being. With the level of the 'brain' hardware and software a fire-fly has been granted, this insect will hardly ever acquire any awareness of the existence of other human consciousness and of other accounts of the universe's emergence. A fire-fly is denied an appreciation of the world at the levels only attainable by humanity. People, in turn, will probably never gain an understanding of the world equal to that of *an other* and qualitatively more advanced consciousness. It looks like there is no way to assess other minds. People will never know how it is like *for a bat* to be a bat. And vice versa.

***

Doomed to materialism

"Yesterday I met one of the programmed biological machines which had made up its mind to stop smoking. I could observe that spontaneous nicotine withdrawal resulted in a significant decrease in brain reward function, as one can see by measuring elevations in intracranial self-stimulation brain reward thresholds. The effect of nicotine withdrawal was similar to the effects of withdrawal from amphetamine, cocaine, opiates, and ethanol."
– FROM THE PARABLE OF ONE PROGRAMMED BIOLOGICAL MACHINE

If our consciousness is physical in nature, our joy is, then, also physical. The same applies to our pride, religious faith, affections, desires as well as our remorse. Again, the answers to such questions as how we feel and believe,

why we are conscious of our own selves and the world around us or what underpins our action and inaction should be looked for in the physical basis of human consciousness, not in the sphere of the preternatural. What is, then, our physical basis, I mean, the material stuff of a programmed biological machine? It must involve some genetically written hardware and some sort of software responsive to the influences of the machine's surrounding.

Not creatures of chance

"I am not yet born; rehearse me
In the parts I must play and the cues I must take when
Old men lecture me, bureaucrats hector me, mountains
Frown at me, lovers laugh at me, the white
Wave call me to folly and the desert calls
Me to doom and the beggar refuses my gift and my children curse me."
– LOUIS MACNEICE: PRAYER BEFORE BIRTH

It is a long time since people have noticed that children may inherit from their parents the color of the hair or of the eyes, their build, or a predisposition to obesity. These outward characteristics of people are defined by their genetic code. However, an ever increasing body of scientific evidence supports the postulate that human 'inner' characteristics are also determined genetically. These include dispositions for love, patterns of relationship between genders, these of raising children, as well as a sense of justice, compassion, and friendship. Specialists from Ohio State University, U.S.A., maintain (July 1998) that in addition to the above quoted traits, about 15 basic longings and characteristics are also determined genetically. These are related to such actions, states and processes as, for example, food consumption patterns, inquisitiveness, disposition to exert a physical

effort, love-making, aversion, orderliness, an exercise of social status, socializing patterns, personal integrity, family values, independence, citizenship, revulsion, revenge, and a will to power. Some may pursue all these more vigorously than others, depending on what exactly has been written in their individual genetic programs.

Research into mental conditions much credit to the claim that the human brain functioning is finely programmed by the genetic code. Wide differences observed in the behavior and thinking of mentally healthy people, on the one hand, and all types of retarded patients may have been brought about by a tiny change to the genetic code of one protein, while the remaining 20,000 proteins may stay intact. The mutation of just one protein, for example, the one close to gene FMR-1, may slow down psychological development (the so called Martin & Bell syndrome). Another such example is Huntington Chorea caused by the mutation of one and single gene. In percentage terms, the changes to our genetic code, which can bring about such huge differences between the behavior of 'normal' people and those mentally retarded, account for less than 0.000001 per cent.

Negligible mutations in the genetic code can affect the organization of the brain hardware and the way in which software is modified under the influence of the surrounding world. We do not know yet with any degree of certainty how powerful the impact of immediate environment and that of the genetic code on the functioning of the brain hardware and software may be. A balanced approach leads us to assume that the two contributions are roughly equal. But there are a number of authors who favor genetic code as the leading agency. They are offset by the supporters of the environment prevalence. Plainly speaking, it is widely admitted today that we are slaves of our genes, but there is no agreement on the extent of this enslavement. But what we mustn't lose out of sight is that we are controlled by the brain

hardware and software which had been evolving over several billion years under social regimes where people used to live gregariously as hunter-gatherers. Actually only over the recent 10,000 years humanity has been engaged in cattle raising, farming, and trade. In other words, over 99.99 per cent of the brain's evolutionary time falls in the period when people existed as hunter-gatherers. This primordial social pattern all too often shows today in the behavior and thinking of the moderns. Just the human brain's inherited hardware and software frequently fails to recognize that we don't live gregariously in the jungle or in the caves any longer.

***

The eternal call

"Does a dove love his female mate more than it is in humans? Why are these birds so often seen to coo? Does the dove's amorous algorithm overlap with its counterpart in humans?
– FROM THE QUESTIONS OF ONE MAN WHO WANTED TO BECOME A DOVE

In what follows, I will try to give a rough (and one of the more probable, I hope) outline of the brain mechanics controlling our behavior. Imagine that the brain has to decide what is auspicious for man and what is pernicious, and that then it will have to urge man to do things which are presumably good for her well-being. How does the brain cope with the challenge of demonstrating to man the benefits of certain comport, while only having at its disposal the material world outside and the laws of natural sciences?

Grossly simplifying, the brain mechanics involved looks like this. There is a little box placed within the

brain, and this little box, relying on the incoming information, molds our emotions, compelling us thus to do what it thinks might be good for us. This tiny box, in fact, secures human reproduction (like this is also achieved in animals). The cerebral little box houses a wondrous 'reward function' which does the job of rewarding us for obeying the instructions of the little box. Information received by the little box is either dispatched in the form of electrical signals discharged down the neuron's axon or in the form of chemical neurotransmitters whose release has been initiated by the electrical impulses, or both. On having analyzed the information input, the software and hardware housed in the little box will assess the information as beneficial. Thereupon the neurons of the box's output system will send signals meant to induce in our consciousness, or us, a sort of warm and comfortable feeling. When, contrariwise, the little box recognizes, following the analysis, that the obtained information is adverse, it will mete out a punishment in the form of the feelings of dissatisfaction, discomfort and unhappiness.

How can the little box discriminate between the information it finds either auspicious or pernicious for man in terms of survival and reproduction? The little box is likely to compare the incoming data with some sort of template. The latter's structure is co-extensive with our hardware and software, and is, probably, composed of mnemonic and functional networks of neurons. If the incoming signals happen to correspond with the template of positive impulses, we are allowed to experience a pleasant feeling. On the contrary, if they disagree with the positive template (or agree with the negative one), we are 'punished' by experiencing negative emotions (the little box makes us feel ill). Presumably, the little box may have stored various templates for assessing our loves, vanities, cravings and pangs of remorse. In short, for everything which, as argued above, has been – largely – genetically written. The little box tries to control human (and animal) behavior so that it

may get as many as possible positive signals and, in the final run, secure a given individual's reproduction. In other words, the little box does its best to see to it that we are 'wealthy and healthy' and leave as many as possible children.

How have positive and negative hardware and software templates come to be? Evolution has seen to it that the genetic code of each individual is most likely to contain a certain amount of information on the life once led by her ancestors. The message of this information is as follows: 'In all your undertakings and doings, follow the example of your forefathers. It is right to live like they used to because they did survive and succeed in reproducing themselves. You, too, will most probably survive and leave descendents if you faithfully stick to their tradition'. This commandment produces positive templates, and everybody 'naturally' obeys it, since otherwise she or he would not be able to multiply, in the biblical parlance. Our ancestors had no choice but love their children and take care of them. Otherwise the young generation would have lost the great battle for survival to the fitter. That accounts for the presence in our brains of the positive template of love for our children and of taking care of them. And the reward function lodged in the little box would give us 'carrots' if we obey the 'eternal call'. We have also a positive template for lovemaking, because, in order to get reproduced, our remote forerunners had to have sexual intercourse, and this became deeply embedded in our consciousness. Reward function responds to sexual intercourse very approvingly: it would reward the participants of the act by inducing in them the feelings of keen enjoyment, satisfaction, happiness, and delight. This is how all genetically controlled traits, repeatedly encouraged and enforced by reward, have found their way to our templates. Perhaps, there also exist genetically determined negative templates. But the consequent

negative feeling may be just initiated by the information that has been rejected by all the positive templates.

How has the human brain's little box learnt to get as much positive information as possible? In addition to the genetically inherited hardware, the box, probably, also modulates software by remembering the succession of incoming signals. The brain's little box remembers what the organism was doing when the positive information arrived, while its hardware and software tries to identify what the organism had been doing before the positive information started to flow. The little box seeks to recognize what triggers the inflow of positive information and subsequently creates another positive template. It is curious, for example, what a man or a woman had been doing before the positive signals geared to a sexual act started to be coming (nothing more 'academic' comes readily to mind, I regret to admit). Therefore, over time, the little box will be urging a man to repeat actions after which it used to receive positive signals. Many conditioned reflexes belong here (the opening of a bottle of champagne would initiate a positive response in its frequent consumers). Drug-addiction provides another example. Heroin ingestion sends out positive information to the little box. When injected intravenously, this drug produces an immediate 'rush', and the little box remembers very well what has caused this terrific 'positive' effect. To achieve a similar experience of a sudden exhilaration and lightness again, the indulgent little box will force the drug addict to repeat the act. I was wondering if the brain would bother to develop this sort of dependence if the 'rush' followed, say, no sooner than seven years after the ingestion of the drug?

How does the brain box make us do what it pleases? Easily. If we do what the box wants us to, it assesses the incoming information as positive, which makes us feel good. 'Us'-consciousness remembers such instances. For us, this amounts to doing what is desired

by the brain box whose reward function, once satisfied, encourages us with the feelings of happiness, satisfaction, bliss, and, sometimes, even of ecstasy. This simple principle underpins all our actions, our endeavors, our longings, joys, sorrows, and sufferings.

***

The parable of very beautiful Isabel and Kuko the Rhino

"…love stayed, love, the eternal fire, burning without harming, not born of scolding desire, no dreg of glands, no juice of sex organs, Dante, not Boccaccio…"
– GYORGY FALUDY: TO SUSY

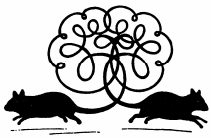
Every one can test the reward function of their brains little box. Suffice it to think for a while about what we do and why this, rather than something else, makes us feel happy, satisfied, and so on. For myself, I came to realize the presence of the reward function contained in my brain's little box during a visit to the Zoo. While watching the rhinos, I kept asking myself why my companion, lovely Miss Isabel, attracted me more than the female rhino Kiki did. Again, why the male rhino Kuko obviously preferred Kiki and took no interest in far more charming Isabel. Why do I perceive Isabel as an appealing young woman, whereas Kuko does not seem to share my enthusiasm (despite the fact Isabel smells much more pleasantly than his Kiki does, and Isabel's conduct shows much more civility and graciousness than Kiki's). For obvious reasons. The matter was that the information on Kiki, after having been received and processed by Kuko's brain, conformed with the positive template within Kiki's mate's brain. The reward function within Kuko's brain's little box immediately recognized in the female rhino Kiki

an object that secures the reproduction of their species. On this account, Kuko was rewarded with a pleasurable, 'positive' feeling. My reward function did not recognize such gratifying promise in Kiki (it would never do this, no matter how hard I might try). Contrariwise, my reward function did not fail to have identified quite a couple of relevant things about lovely Isabel, so the release of an appropriate substance from my nerve terminals followed. This triggered further changes throughout the neural circuitry. Small wonder, then, I found Isabel appealing. Still, a wild idea flashed through my mind: What would happen if mine and Kuko's positive templates got somehow confused in our reward function boxes? It would be more than fun for me to be enjoying with Kiki the squelchy African swamps. I was not very sure, though, about how Kuko the Rhino could enjoy the delights of beautiful Isabel. Anyway, it's the fact of life that our tastes are under genetic control.

***

Chapter Six

Of Human Bondage: Reward Function



"The existence of direct brain reward mechanisms is well established … The brain dopamine and endogenous opioid peptide systems, intimately involved in subserving and modulating direct brain reward, is also well established. That probably most classes of drugs of abuse acutely sensitize these brain reward mechanisms is equally well established. This drug induced sensitization or brain reward system is believed to underlie the drug induced subjective feelings of euphoria that are sought by human drug abusers and which may constitute one of the primary sources of craving for drugs."
– ASSISTANT PROFESSOR MING XU, Ph.D.

"*I know that if this boy had been understood and properly trained – properly for him – and the training that he got might have been the very best for someone; but if it had been the proper training for him he would not be in this courtroom today with the noose above his head. If there is responsibility anywhere, it is back of him; somewhere in the infinite number of his ancestors, or in his surroundings, or in both. And I submit, Your Honor, that under every principle of natural justice, under every principle of conscience, of right, and of law, he should not be made responsible for the acts of someone else …"*

– CLARENCE DARROW: LEOPOLD AND LOEB: THE CRIME OF COMPULSION

So, once the reward function of the brain's little box finds out that the incoming signals are positive, it grants us something good by way of encouragement, let us say, a warm feeling of satisfaction and happiness. Very positive information will be appropriately rewarded by a very intense and pleasant feeling – an ecstasy. In plain terms, the physical information received by the reward function enters it in the form of electrical impulses. It also reaches the brain reward function in the form of released chemical substances capable of bringing about striking changes in the behavior of neurons and, through their sets, of modulating our sensations and emotions. The hardware and software of the brain reward function will discern 'good' information and, subsequently, will reward us, for example, with the outpouring into our brains of endogenous, or in-the-body, drugs. These will induce in us the feelings of joyfulness and felicity. In this manner, devoted mothers are rewarded, you and me for having mended a damaged fence or having had a big meal, for having won a game of tennis, having made friends with someone good or for having cleverly chosen our life partners. In a word, we are encouraged each time we have done something that is written in our hardware and software as 'positive'. That is to say that we are prompted to undertake activities approved by our reward function in expectation of the appropriate reward (the brain will release substances called endogenous drugs, and many more attendant processes we don't know of yet may also be involved). The presence of endogenous drugs in humans and other animals has been experimentally demonstrated. The human body, particularly the brain and certain glands, produces powerful, mood-altering chemicals. The latter would trigger changes in our thoughts and actions. So far, the occurrence of such

opioid peptides as enkephalins, dynorphins, endorphins, and neoendorphins have been identified in the human brain. When bound to the opiate receptors, they modify information passage along the neurons and the processes of their interaction at synapses. Exogenous drugs of abuse such as morphine or heroin act similarly to endogenous opiates, and exert largely the same pharmacological effect. Natural enkephalins and endorphins are produced in the brain also in response to stress and injury, and basically make life easier to handle when times get tough. In addition to peptides, it now appears, morphine, codeine, and related morphinans occur naturally in mammalian tissues. Many more substances, which can endogenously modulate our brain reward mechanism and bring us relief, joy or – alas! – an increasingly sought-after 'rush' of happiness, are probably yet to be discovered.

In short, people as programmed biological machines, tend to behave so that their reward function may be optimally indulged. With a view to performing this, our brains contain chemical substances and, perhaps, more other things. In popular parlance, people seek to engage in activities which will let them dope themselves endogenously. They tend to pursue things which bring them most pleasure and happiness. This is how the reward function guides us in our path. This is how the enslaved humanity is busy placating their selfish little pleasure boxes.

***

Drugs, our daily bread

"Throughout history people have used drug-induced states to transcend their sense of separateness and feel more at one with nature, God, and the supernatural. Marijuana was used for this purpose in ancient India, and many psychedelic plants are still so used today by Indians in North and South America. Alcohol has been used for religious purposes in many parts of the world; the role of wine in Roman Catholic and Judaic rites persists as an example."
– ANDREW WEIL, WINIFRED ROSEN: FROM CHOCOLATE TO MORPHINE

The reward function cannot find out whether the received electrical impulse-action potential (or the release of chemical substances) has been triggered by endogenous mechanism involving narcotics naturally occurring in the brain (endogenous drugs) or by exogenous chemicals. Therefore, people can be equally rewarded not only where endogenous drugs are involved, but as well where information has been mediated by exogenous substances.

Exogenous drugs must have been widely used throughout the entire history of humanity. Some authors mention the pre-Columbian Toadstool-god Tlaloc, represented as a toad with a serpent head-dress. For *thousands* of years he presided at the communal eating of the hallucigenic toadstool *psilocybe* – a feast that gives visions of transcendental beauty. Partakers in the Eleusinian, Orphic and other mysteries may also have known, *panaeolus papilionaceus*, a small dung-mushroom resembling in effect mescaline. Exogenous drugs are still used, for example, in the religious ceremonies of Mexican Indians as well as by many tribes inhabiting African and the Amazonian rain forests. Europeans from the most affluent industrialized countries, once under the influence of such drugs, would dance and sing, and see the visions of gods and spirits conjured up by the

chemicals concerned. In a word, they would display all the gamut of emotional responses observed in members of South American Indian tribes. Over a long historical development, people used to get intoxicated at religious ceremonies and seasonal festivities with potions made of drugs, which would get them in the state of trance. Shamans, ideological leaders of long ago, eagerly helped us in reaching this state [20]. In fact, contemporary politicians resort to similar means for the sake of winning the sympathy of their constituencies. We are given lots of opportunities to dope up ourselves endogenously while joining modern 'rituals' such as demonstrations in squares and streets, gatherings in congress halls and at baseball and soccer events; further, in seeing pop concerts, attending church, watching soaps, and listening to the radio. We 'ingest' drugs when we are exposed to high status and pomp, fastness and smartness, to strength and prowess often combined with violent behavior, and to the images of the future – a kingdom of justice, opulence, and bliss. We have actually developed a tolerance to all these, needing more and more of such stimuli.

It has been shown by contemporary science that what we do reasonably regularly tends to fix new wiring of neurons hooked together in complex ways (the so called synaptic plasticity in the brain). These new connections modulate our hardware and software. The use of exogenous drugs over the long course of human history must have appropriately shaped our hardware and software [20], contributing to our being what we just are (specific patterns of neural connections have been formed, strengthened and maintained in the brain in response to the environmental cues). It appears that we cannot make do without drugs, and this may also account for our unquenchable desire to experiment with our consciousness. Humans would ingest drugs for socializing, relaxation, self-discovery and escape. Infants, for example, would rock themselves into blissful states to

change awareness. Teenagers more or less regularly attend concerts, consume alcohol, nicotine, and sometimes strong drugs to sample 'the real thing'. Some adults need to regularly consume alcohol, others need to see and here something special, or expose their consciousness to yet new different experiences and plumbing its full depth and breadth. Having now and then 'high' experiences may be something we need to stay hale and healthy. Some among us would achieve such limbic, emotional effects either through appropriate life styles or through the consumption of psychoactive drugs.

New connections (tolerance and addiction) are not only created following chronic drug use (abuse), but also as the consequence of pursuing cultures with their traditions, customs, and rituals. It is exactly in these terms that we are chronically exposed to the eventually addictive exercise of our own culture. A many times heard tune (particularly a catchy one) tends to colonize the minds and become 'popular'. It is reportedly quite typical for a person to be at first bored by certain activity, which may over time come to be gratifying. As a rule, when you drink beer for the first time, it does not taste good. Over time, you may become very enthusiastic about this brew, once your organism has developed a liking to it. Such alteration of the brain synapses is popularly referred to in terms of 'he's got used to beer'.

***

Drug lusts

"Today I have come across a certain programmed biological machine, whose various neurotransmitters, neuromodulators, and endogenous opioid mechanisms (closely linked with dopamine transmission in the mesolimbic pathway) have been interfered with by alcohol. In this case the alcohol uptake depended on the activity of the endogenous opioid reward system, and its consumption served to compensate for inherent deficits in this system."
– FROM A CONVERSATION WITH ONE PROGRAMMED BIOLOGICAL MACHINE

When and where, then, can people drug themselves intricately, as it were? We do this whenever we accurately obey the commands of our ancestral genetic code and those of our software modulated by the clues of our cultural environment. Gender relations, our sense of justice and ability to sympathize with others, modes of socializing, family relations, a striving for independence and a will to power are all just different ways of indulging in this innocent addiction. Here also belongs to watching football and hockey matches, and getting mad with joy about the goals struck by 'our' team. We can get drugged while wearing a new suit, driving a luxury car, or exhibiting our strength, dexterity, or wit at appropriate events. All those fitness addicts posing in the gym also seek endogenous drugs flush and, eventually, extreme sensations. We do experience the same when we get a top-level post such as a city mayor, a MP or a head waiter. Or else, when we are approached by a celebrity. When we earn handsome money. After having helped others, having given some one a gift, or, equally, after having managed to steal something. Again, when one has attained economic security. In a word, whenever you reach what you have always wanted to.

Composers seek tunes, rhythms, and melodies which would be able to initiate, in as many people as possible, a release of the most effective endogenous drugs. The higher the amounts of these substances outpoured, the more successful a composer will be. People can perform great feats while under the influence of endogenous (and sometimes also exogenous) drugs. In some cases, people with extreme hardware and software would innately drug themselves (stir their blood) in order to take a revenge, to physically harm and even kill other human beings. The imperatives of different reward functions divide people into 'chemical' friends and foes by rendering their values incompatible. Members of religious sects and worshippers of various churches would, for example, positively satisfy their reward function via saying prayers and engaging in meditations. That is to say, they can experience highs by meditating. It sometimes happens that meditations or pastoral preaching can endogenously drug the devotees so much that they would go into ecstasy. Some worshippers may experience at religious ceremonies mystic feelings similar to these induced by psychedelic drugs. For example, Walter N. Pahnke, a psychiatrist, studied whether the neuro-narcotic psylocibin could produce sensations similar to mystical religious experiences [19]. Ten of the twenty theological students, all thereof claiming to have had previous mystical religious experiences, received psylocibin; other ten students were administered placebo. Three of the ten students who had been administered psylocibin reported profound mystical experiences, similar to these they had earlier in a drug-free religious trance. The students who had been administered placebo did not report such experience. Likewise, students of, let's say, Christianity and Buddhism have often pointed out the similarity of the psychedelic experience to the transcendent state attained through Zen or other forms of deep meditation.

It reminds me certain festivities in Szeged, Hungary, where we were drinking some good Hungarian wine,

while guests from India, in conformity with their religious doctrine, abstained from the consumption of alcoholic beverages. When asked how they 'break the ice' at festivities and celebrations, they replied that in their country this was usually performed by meditating. That is to say, they would meditate in order to get excited, and through doing this they may even attain the state of trance. The fact that some people can reach such high states through meditation without any uptake of exogenous drugs confirms the finding that one can learn to get the release of endogenous drugs at will. It is also assumed that an exogenous drug uptake depends on the activity of the endogenous opioid reward system, so drug consumption may serve to compensate for the inherent deficits in this system.

***

Are you a fitness junkie?

"Keep-it-up-keep-it-up. Up! Up! Up!' The manic repetitive beat booms out of the fitness centre in Crouch End, north London, where evening aerobics is in full swing."
"Keeping it up, up, up, can get you down, down, down – if you get dependent on it."
– GIDDENS, A.: SOCIOLOGY. INTRODUCTORY READINGS

Regular activities we have got used to and are only too happy to maintain, can initiate the release of endogenous drugs as well. Therefore, some people regularly meditate or say prayers, others attend a yacht club or a local pub, still others climb mountains, play bowls, gamble, gather together for a five-o'clock tea, or come round for a pint of beer and a pie. All the above-mentioned activities or forms of socializing involve the elements of compulsive

drug-seeking behavior. Exercise of sufficient intensity and duration, too, has been demonstrated to increase circulating β-endorphin levels. This explains, for instance, regular running by those who actually seek in this activity their habitual uptake of β-endorphin. The same applies to body-builders, swimmers, mountain climbers, skiers, etc. This is to say that people can also develop dependencies on endogenous drugs. I was wondering, though, why in my case no endorphins get released when I do the vacuum-cleaning of my flat; I have been regularly doing this share of household chores for a few years now. Why does vacuum-cleaning remain unrewarding with me? Why doesn't it provide 'flow' – this floating sensation making one forget everything but the object of her work?

Many drugs of abuse, administered repeatedly over time, cause physical dependence which is expressed by a withdrawal syndrome when the drug is removed from the system. The full physical addiction and a withdrawal syndrome applies to endogenous drugs as well. One can get addicted to anything. For example, jogging junkies experience severe mental and physical discomfort if circumstances prevent them from regular running. They would get irritable, restless and impulsive until they have had an opportunity to rebalance their brain. The same abstinent symptoms are encountered in skydivers, aerobicists, tourists, yachtsmen, bowlers, amateur photographers, members of a religious sect or cake eaters, when they are obstructed, for this or that reason, in the pursuit of their habitual activities. Yes, any practice can become addictive, and the withdrawal syndrome would make you climb the walls. Drug addicts dependent on the direct application of exogenous drugs are constantly busy raising money for appeasing her drug reward function with ever new and larger amounts of exogenous drugs. Runners, tourists, mountain- climbers, skiers or skydivers are in many cases as well busy raising finance so that they might subserve their reward function relentlessly claiming its habitual dose of endogenous

drugs. **Mind, you can get addicted to anything – from designer trainers through jogging to fear. Some individuals get a rush from making money, for example. But any object of our craving tightly controls and enslaves us.**

***

Enjoy your addictions

"You shall follow the dictates of your reward function and only covet what it allows you to."
– FROM THE PRAYER SAID BY ONE STRANGER

The massive promotion of belief in supernatural forces and in the existence of the mystical (which is allegedly beyond our control), the wide-spread propagation of belief in the curing abilities of quack doctors and interpreters of dreams and destinies have become a concern of a host of institutions and technologies, ranging from famed cathedrals through to the cheapest line of television sets. A common task entrusted to all these is to divert our attention from forging a rational and scientific account of the world. 'Modern slave owners', like their predecessors, understand only too well that it is much easier for them to run the world whose inhabitants are rather captives of illusions than seekers of the higher levels of understanding. Oftentimes, the wise of this world would reiterate that, overall, people prefer illusions to stark reality. Even when it comes to cases where their illusions are fraught with tragic consequences.

"I don't think I'll be in the wrong to suggest that it is exactly 'modern slave-owners' that cunningly make use of the instructions issued by our outdated and considerably benighted genetic code. This code, in turn, does its best to instill in 'Mo(dern)slaves' the 'Playboy philosophy' [21] *of*

postmodern hedonism – a philosophy which preaches that we should only engage in doing things that make us and our body feel good. Our body allegedly knows best what it needs. In other words, one has to listen to the whisperings of her genes and genitals, not to the contemporary scientific findings which shed new light on the postmodern human condition. Any attempt on the part of people at controlling the primordial needs and whims of their bodies is viewed upon with suspicion. Such efforts are commonly dismissed as part of unnatural pressure brought to bear on our traditional psyche and physics. We allegedly must not be robbed of what has always been our natural entitlement and birthright. In the parlance of the 'XXI century slave owners ', we have been born to enjoy ourselves and life as such.

Curiously enough, it has been scientifically testified that the human body would not frequently know what is really good for it, and the brain too easily succumbs to pleasure (an enjoyment repeatedly experienced once one does something that in the time of old used to confer additional survival advantages on the doer). In terms of anatomy, satisfaction complex as well as that of desire, joy, happiness, and enjoyment belong in the brain. Through artificially activating its pleasure centers, you may induce the feelings of gratification and joyfulness, of happiness and enjoyment. Experiments on laboratory rats have shown that electrical impulses applied directly to their brain pleasure centers would stimulate in them joyfulness and happiness. Rats placed in a cage with food in one of its corners could only get impulses inducing happiness in another corner, with no food around. It's very revealing that, confronted with the choice between food and enjoyment, the animals used to go to the corner securing pleasure, until they eventually died of hunger. The same facts have been obtained in the experiments on the monkeys, who could choose between food and a job for which they were rewarded by a heroine fix. They preferred exhausting work and heroin uptakes as reward till they

died of exhaustion. People are not much different. High numbers of drug addicts, alcoholics, victims of venereal diseases, and frequent unwanted pregnancies give a great deal of credit to the insistence that the human body, instructed by the obsolete genetic code, knows not indeed what is auspicious and what is noxious for the healthy and fulfilling life of modern humanity" [21].

Genetically written 'good' information is, as all in this world, used and is often abused. Our reward function is nowadays potently abused by the smart ones with the purpose of squeezing rocket-soaring economic gains from the rest. Economists do realize that our reward function has a set of needs and wants. The most commonly employed motto is, 'What is good for your reward function is also good for you'. That this may not be the case is confirmed by the soaring statistics of drug addicts, alcoholics, murderers, kidnappers and rapists.

Being responsible for our successful reproduction, reward function will 'administer us a drug' – by way of reward for having received 'good' news generated in connection with the things we have done in the line of reproduction. It is assumed that 'good' information related to sexual relations is more potent in a male than in a female. This explains why more sexual services are advertised and traded with an eye to men rather than to women. The above fact has been cleverly exploited by Hugh M. Hefner for erecting his *Playboy* (the first widely distributed magazine of the sensate age) empire and, by Larry Flynt for establishing his. Of course, many other erotic businesses make the best of the same primal drive, cashing in on the determinism of the human genetic code. The above equally applies to tabloid magazines which, to reach higher circulation and ensure good sales, would tag the front cover with a picture of some sort of 'sex pot'. The more of her naked body is exposed, the better. The most recent television clips are not lagging behind tabloids. Young people with sex appeal are hired to ensure the efficiency of advertisements. I have checked today

(February 19, 1999) on the attendance of the 'sex and erotics' web sites; among the hottest addresses, they have comfortably occupied second and third positions in showing lavish numbers of hits per month. At that, these are the pages containing no information indispensable for people's daily concerns. Yet puritans shouldn't get very hot under the collar on this account. Yes, these sleazy pages are sought-for by young folk. But humans have just been programmed in such a way that 'sex and erotics' tend to 'positively' excite them. You may also want to know that the sex hormone progesterone is our endogenous antidepressant. In this context, it may be the case that sex was 'allowed' for various subjugated and deprived historical groupings (slaves, serfs, etc.) just because it was a handy relief from depression in their dull and hard life. In modern times, depression of the 'bewildered herd' is alleviated by glorifying free sex, by the dissemination of erotic and pornographic magazines as well as by showing erotic films on television.

The entertainment business is another form of putting our brain's reward function wants to use. Young people would be provided the short way to endorphins at pop concerts and discos. When you revel to the tune of 'positive music', electrical and chemical impulses coming from the ears activate the system which is in charge of the release of endogenous drugs into the brain. The owners of disco facilities have found out that special light effects tend to excite visual receptors and to send out electrical and chemical impulses which, upon processing, would initiate a yet more bountiful drug influx to excite the brain and make our heads reel. Ever higher excitement is achieved by introducing into the disco program an erotic female or male dancer. This mix would oftentimes trigger such high levels of endogenous drugs release that disco visitors would go into ecstasy and even reach an orgasm. In fact, young people go to a disco for getting doped up like our ancient ancestors used to do over the hundreds of thousands of human evolution,

when they used to join religious and season festivities with their mandatory dances, music as well as herbal and mushroom drugs. People have always used drug-induced states to encourage congeniality, to enhance sensory experience and enjoyment, in a word, to get 'high'.

Our reward function is shamelessly abused by 'offering' us actually very slim chances of getting rich overnight in the gambling houses of Monaco and Las Vegas as well as via highway gambling machines. Marching bands augmented by majorettes at the opening of sport events, advertising shots, the purring charm of politicians, the glamour and fitness of top celebrities, the advert for a perfume, and the pervasive thrust on image at large also exploit the primordial drives of your reward function. Even virtual reality has not failed to abuse your reward function. All and sundry make the best of its appetites, no matter whether we are better or worse for it. The highest premium is put on satisfying Her Majesty Reward Function.

***

Welcome to the millennium of portable happiness!

"Psychiatrist Peter Kramer refers to the use of drugs to remake personality as 'cosmetic psychopharmacology."
– SOLOMON H. SNYDER: DRUGS AND THE BRAIN

People have long used cosmetic preparations for improving their looks. Some even don't stop before undergoing facial plastic surgeries for the sake of the overall improvement of their looks. These deliberate changes to our natural appearance are part of our currently pursued culture. The advances in science and exploration of the human brain have enabled the human

race to invent many substances that can, at will, modulate even their consciousness. Up to date, we have known six groups of powerful psychoactive drugs, many thereof addictive substances exacting a huge toll on society. They include opiates, antischizophrenics, antidepressants, stimulants, tranquilizers, and psychedelic drugs. Goodman & Gilman's book, *The Pharmacalogical Basis of Therapeutics* [22], lists seventy psychoactive substances. These drugs, which can potently affect our consciousness, are easily accessible on prescription.

While visiting one of the web sites, I have come across the following information. The 1994 Alcohol and Drug Survey indicates that 13 per cent of … (I am afraid I can't recollect the nation at the moment) use legally prescribed opiate narcotics, 4.3 per cent use tranquilizers, 4.5 per cent use sleeping pills and 3.0 per cent use antidepressants. In 1995, the number of prescriptions for psychotherapeutic drugs increased by 7.1 per cent and prescriptions for analgesics increased by 3.0 per cent over the previous year. The effect of these (psychopharmaceuticals), capable of modulating the program in control of our psyche, further confirms that people are just programmed and programmable biological machines.

When we have a very important business appointment or get ready to join a circle of influential people at a cocktail party, we commonly try and make the most of our appearance in order to produce the best possible impression. We would reach for the smartest clothes at hand, accurately comb our hair, and choose an appropriate perfume or deodorant. Women would typically wear make up on such occasions. But what about our mood? At times we would like to have it 'pruned', too, through one of the wondrous mood-enhancing elixirs. This is no longer anything impossible, for pharmaceutical manufacturers have literally overloaded us with a vast armamentarium of mood-

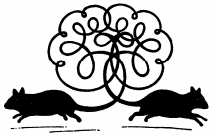
altering substances flooding the drug market. Just pop a pill to be rocketed out from dullness to sensory fireworks.

The bothersome question which invites itself is this: Will our culture eventually put up with 'cosmetic psychopharmacology' and its pharmacological interventions into the self as yet another extension of our reward function abuse? Will we seek to regulate our emotional behavior and re-engineer our personalities by ingesting exogenous pharmacosmetics? Will it be in the future taken for granted that, in getting ready for an important meeting or a date with a beloved one, we will 'trim' our psychological state in order to make the best possible impression? Perhaps to intensify emotional connections with the partner? Depending on a type of meeting (or people) you will be able to employ an optimal mix of psychoactive drugs designed for a particular purpose and known to elicit exactly the mental state desired. These will cosmetically beautify your psychological makeup, in conformity with your actual desire, rendering you either romantic, self-confident, joyful, witty, firm, sexually attractive, enigmatic or just trivially normal. Do current psychoactive drugs consumption statistics confirm the claim that we have already treaded a slippery path of common use of 'cosmetic psychopharmacology' products? Have the addictive dangers been properly appreciated? A pretty bleak picture excuses two more questions, namely, Where are the bounds, if any, of the abuse of our reward function? Overall, aren't these bounds the ones of human sense? Dividing lines have recently got too muddy to expect an early answer, on the one hand, and too decisive not to ask questions on the other.

***

Chapter Seven

Illusion of Free Will



"We, slaves of our free choice, swear:
- *to crave only what our free will wants us to*
- *to love only whom our free will wants us to*
- *to hate only whom our free will wants us to*
- *to do, in short, only what our free will wants us to.*
- *And we promise to never ask who's Creator and modulator of our free will".*

– FROM THE PRAYER OF A FREE-WILLED SLAVE

"Man is not a creature of chance."
– ECCLESIASTES

Like other Earth's animal species, humans (*alias* primary Programmed Biological Machines) have since time immemorial cherished and exalted 'natural state' as a space for the optimal exercise of their freedom. People tend to believe that when they are free, they can take independent decisions on their action or inaction, and on issues vital to their lives in general. They are also convinced that freedom allows an unrestricted exercise of their free will, which is a point of pride for most humanity. Many current religious and public ideologies also highlight free will as a moral source of individual

lives and of current human societies committed to democracy and market economy. Everybody believes to be the master of her free will. We believe that we can go one way or another. The future seems open, and the outcome of our efforts is believed to be under our control. Overall, free will as a measure of self-determination that people believe themselves to possess have ever been a much valued human attribute. But there are questions to be asked, which might cloud these assumptions. Yet let us ask ourselves a question: Is it the case that we do take decisions as free agents? Most people are sure that yes. As for myself, I agree with people who think differently. Therefore, in this chapter I shall attempt to show that we actually have no chance to exert our 'free' will. Or rather, that we have no free will in any strict sense of the word 'free'. Ours is a considerably curtailed free will. At that, I am not going to get involved in the free will vs. determinism dispute, since I don't feel equipped to really contribute to this discourse. In my considerations, I will proceed from the assumption that our consciousness has a physical base and involves the mechanism of illusory truths creation as explicated earlier in this essay. I will try to show that many decisions vital to our life are not the outcomes of our free choice. Conversely, these are largely determined by the brain hardware and software, complete with the mechanism involved in fostering illusions of truth and the brain reward function temptations.

The very fact that our consciousness has a material correlate straightforwardly entails that we don't have any 'free' free will in absolute terms. Given the above, our free will is just the product of the brain function. The operation of the human brain, in turn, is contingent on its hardware and software equipment. This reality makes our brains dependent on many singular operations and processes. For example, there is a great role to play for the rate of impulses flowing out through the axon (a neuron's output cable) to its terminals. (Other processes

involved are, for example, the opening of the sodium and potassium channels in the membrane of the synapse). Again, our 'free' will depends on the sophisticated handling of the incoming signal in the synapse with its many tailor-made receptors. Now our consciousness is affected by the amount of transmitter released into the synaptic cleft (at the presynaptic side of the tiny gap between the two adjacent neurons); further, upon the neurotransmitter's diffusion and the ensuing activation of the receptors of the postsynaptic membrane. Our so called free will is also contingent on the phosphorylation of the calcium channels on neural membranes. To make a long story short, all these are preconditioned by the instructions written in the genes. I could keep listing scores and even hundreds of factors which affect the activities of the brain neurons, thus modulating our thinking, the way we arrive at this or another type of illusory truths, our consciousness, and our so much extolled free will.

The very first question to pose in this perspective is whether there is enough evidence available to testify that we do not exert our will in the strict sense of the word, 'free'. I am inclined to answer in the positive. Moreover, in my opinion, such evidence is fairly extensive and commonly accessible. I shall go below through a few hard facts.

***

Feel free to choose your chewing gum

"As opposed to the official feast, one might say that carnival celebrated temporary liberation from the prevailing truth and from the established order; it marked the suspension of all hierarchical rank, privileges, norms, and prohibitions. Carnival was the true feast of time, the feast of becoming, change, and renewal. It was hostile to all that was immortalized and completed."

– MICHAIL BAKHTIN: RABELAIS AND HIS WORLD

Freedom of religious conscience is one of the banners waved by societies which want to join the elite club of democratic nations. Loosely speaking, we are being persuaded (and many of us will have got convinced) that we affiliate with this or another religious denomination absolutely freely. But the history of dissemination of various religious doctrines and demographic statistics of members of different churches and religious faiths within them leave the attentive reader with no doubt that most people do not opt for their religion independently. Why do we actually embrace this rather than another religious faith? What factors tend to be fed into this process?

Imagine, if you please, that somewhere over in Israel a child has been born into a Jewish and into an Islamic family resident in Palestine. The Jewish child, who will be probably raised in conformity with the Jewish tradition, will grow up into a faithful Jew. The Palestinian-born child will be, in all likelihood, brought up in the Islamic family to become a worshipper of Islam. What would have happened if the two children had been exchanged at the maternity hospital at birth? Should the replacement have gone unnoticed, a Jewish-born child would have most probably grown up into a faithful Muslim convinced that she has chosen their religion freely. On the contrary, a Muslim-born child would have become a faithful Jew, as much certain that her religion has been the result of their free choice. Moreover, either will be most probably convinced her religion is the only right one. If the hypothetical exchange had not been the case, the Jewish-born individual would have pursued her traditional religion and possibly 'struggled' against Islamic Palestinians. And vice versa, provided that the hypothetical exchange had taken place, the very same person would have been committed to Islam and would have 'struggled' against the traditional religious values pursued by the Jews. This is as much as to say that

religions we become committed to, along with their creeds and values, are largely determined by the cultural and family contexts in which we are brought up. It is humorous to think that our religious feelings are heavily dependant on whether we have been exchanged in the hospital at birth or not. To conclude, we dispose of no free will in opting for the 'right' religion. If children had really any possibility of a free choice in religious matters, this would entail further possibilities to exert their will in, let us say, picking their parents, a milieu in which they would prefer to be raised and educated as well as, very importantly, in having a say as regards whether they want or not to be exchanged while still at the maternity hospital.

This would equally apply to the situation in Northern Ireland with regard to the Catholic and Protestant newborn. Their faith would depend on whether they have been or have not been exchanged at birth. Yet either exchanged or not, a child brought up in the Catholic family will be, most likely, committed to Catholicism, while the one raised by its Protestant milieu will stick to Protestant values. Children from Northern Ireland can hardly have more than these two avenues to choose in terms of religious worship. There are, of course, countries, where more religions are practiced, so its nationals have a wider choice in this respect. Take India, for example, where a child, if by any chance substituted for another one in the hospital, may become a Hindu worshipper, a Muslim, a Christian, a Sikh or a Buddhist. Remarkable thing about this would be that she would be sincerely convinced that her religion is the only right one and that it has been freely chosen. Very too often, she would be ready to affirm the truths and values of her religious dogma at any cost. Cultures are very efficient at inculcating their values and world pictures.

The demographic composition of worshippers across various religious denominations also testifies to the fact that the declared free conscience is frequently far from

being a matter of our free will's autonomous choice. For example, Roman Catholics make up 95 per cent of the population in Nicaragua, while Protestant faithful account for only 5 per cent. That means that a child born in Nicaragua will most probably (95 per cent probability) become a Roman Catholic worshipper. Its chances to have adopted, for example, Buddhism are very slim, as its faith is determined by the place of birth. Had Nicaragua been colonized back in the sixteenth century not by the Spanish Catholics, but by, for instance, the Islamic Arabs, 95 per cent of its present population would most probably be Islamic. People, at that, would have thought they had opted for Islam as their faith absolutely independently and freely. There are, of course, many other areas on earth where over 90 per cent of local population believe just in one religious doctrine.

By way of comparison, let us take a look at sneakers and chewing gum labels worn and chewed by Nicaraguan inhabitants. We have learnt that 95 per cent of this country's population affiliate with one religion, but they do buy different labels of shoes and chewing gum. For fairness sake, it behooves me to say that the range of the latter is wider than that of religious denominations. In pragmatic terms, however, when it comes to such an essential decision as opting for one's religious identity, Nicaraguan population have no chance to follow the instructions of their individual 'free' wills. Conversely, they are free, if not completely what with the widespread and potent advertising brainwashing, to rely on the advice of their free will in deciding on insignificant things – such as brands of consumer products. The same is true for India, where an inhabitant, if theoretically free to choose among the Hindu, Muslim, Christian, Sikh or Buddhist religious teachings, usually chooses not. In most cases, she 'inherits' the religion of their parents, but exerts her individual will in buying the labels of trainers and chewing gums to her very individual liking.

Another example of the actual absence of the 'right to choose' is provided by the political realm, where it has become fashionable to waver the banner of pluralist democracy and competitive elections for filtering political parties. It is taken for granted that such elections ensure a free support of and identification with your favored political party and ideology. Yet the very high levels of election campaign costs and the massive involvement of the media backing up individual political groupings make it more than clear that they struggle for the impact exerted on the free wills of the electorate. Of course, after casting their ballots, the carriers of so called free wills can relatively freely choose a restaurant to have their lunch in. Admittedly, it is much easier to pick your restaurant because the 'election campaign' in this particular case is not so costly as the one involving the choice of political parties and, thus, catapulting their representatives to top official positions.

Now how much of our free will is involved in looking for our life partners or spouses. A young man or a young woman 'freely' search, by 'trial and error', for their partners in order to eventually establish a family. He or she is guided in this by their 'free' will, which has been powerfully influenced by the brain's hardware and software. To conclude, our illusion of really having and exerting so called free will in taking independent decisions may flow from the experience where we do exert it, but would be, as a rule, the case of not a momentous circumstance. Paradoxically, as soon as decisions vital for the life of every individual are concerned – such as choosing a religion, a life partner, core values and ideologies to pursue – you cannot help realizing that your 'free' will is considerably curbed. This is the result of the fact that free will is determined by the brain hardware and software, these being in turn tightly controlled by the reward function (manifest in the capricious and indulgent 'pleasure box').

***

Free will: A marketing survey

"What do they see in it?" He says again. "What are they after?"
"*Look at 'em'! Like lemmings. Lemmings." He smacks his lips on the word, though in truth he isn't entirely sure what a lemming is. Some kind of small animal, isn't it, that moves in a mindless pack and throws itself into the sea?"*
– DAVID LODGE: PARADISE NEWS

As I have already pointed out in the preceding chapters, deliberate production of illusory truths in the advertising and promotion industry has become an inalienable part of our quotidian experience. In fact, advertisements seek to mould our free will by persuasion. Even a fleeting glance at the many thriving advertising agencies confirm the success of this huge industry. The fact we would respond to advertising messages by purchasing the goods promoted, and not any others, is a testimony to the suggestion that our free will, we would pride ourselves on, is not all that free and may be easy meat for the brightly lit billboard you are almost certain to stumble on even in the green blessedness of a lush meadow, or for a 30-second long television commercial. Not only can advertising agencies modify our free will ('Hyundai. *Prepare* to want one'), they even vie for which among them will succeed in doing so in a more profound way. Advertising is expensive, therefore the agencies involved could calculate the pecuniary equivalent of our free will fairly accurately. Considering how easily people may be influenced by commercials, the price cannot be too high.

The next testament to the dependence of free will is the very possibility of fairly accurate prognoses. In this

context the Gallup poll comes readily to mind. The very fact of existence of various prognostic institutions (producing handsome incomes, too) challenges the independence of much glorified human free choice. Prognoses institutes derive their profits by competing for the delivery of the most accurate estimate of our prospective – 'free' – purchasing choices. The all too familiar diction of their reports is that of certainty as regards our prospective desires and needs: *In the second half of the current year, we saw a 10% pick up in Porshe sales due to a highly efficient campaign that…* Briefly, the decision of our precious free will has been manipulated by the well targeted promotion of the product. This is how Lee Iacocca, the legendary Chief Executive Officer of the Chrysler Corporation, recalls – and very revealingly for our thesis – his early years at Ford and his success with the Mustang: *"I had a target in my mind for the first year. During its first year the Falcon had sold a record 417,174 cars, and that was a figure I wanted to beat. We had a slogan: "417 by 4/17" – the Mustang's birthday. Late in the evening of April 16, 1965, a young Californian bought a sporty red Mustang convertible. He had just purchased the 418,812th Mustang, and we finished our first year with a new record."* Or from another segment of societal life: "*The Party of the Southern Center is expected to scratch just around 2-3% of the national vote…"* This is to say that our 'free' political preferences will depend on the efficiency and professional levels of the election campaign mounted by this or that political party. (Which *is not* to say that economic practitioners are content with the explanation of the organization of private choices supplied by economic theorists.).

On free will and reward function

"The above having been said, I can't help thanking my brain hardware and software for not coercing me into desiring to wear most recent fashions; it has no scope for me, either, to drive luxury cars or to play poker or tennis. I'm equally very grateful for not being coerced into constantly proving my wittiness, smartness, prowess or efficiency. For not craving to become a minor celebrity (after, perhaps, getting profiled in People *magazine*) *or envying any – whether minor or major one. Further, I'm very happy to be encouraged by my hardware and software to practice a host of other things I quite enjoy doing."*
– FROM REFLECTIONS ON FREE WILL AND REWARD FUNCTION

It is Saturday afternoon. Some people have chosen to go and watch a football game, others to take a walk in the woods, still others to call in for a drink at a local pub. Some look forward to tinkering in their cellar workshop, others to setting off to tend their land plots and vineyards. Everybody has taken her independent decision and is in no doubt that the choice is completely 'free'. Geared to certain illusory truths, this decision is expected to grant them optimal gratification, a good feeling of a rightly chosen activity – either in the present or, through its effects, in the future. I argue that most people have opted for this or another kind of activity or entertainment in order to meet the imperatives of their reward function. We can see, thus, our notorious 'free will' shrunk to just a positive activation of the primitive 'pleasure box'/reward function bugged into the human brain. The range of our 'free wills' as cited above only reflects the divergences between our individual anatomical and cultural brain dispositions.

A time for postmodern heresies

"…in the maze of time, the centre is everywhere. Entering that maze, we leave behind the varieties of death that are embedded in patriarchal history. We enter into the living history of the future."
– ROBERT KROETSCH: THE LOVELY TREACHERY OF WORDS

Scientific evidence available so far allows one to assume that the life on the planet Earth has emerged from inorganic matter to achieve, over a couple of billions of years, its yet most sophisticated form represented by *Homo sapiens sapiens* or a twofold wise man to be referred in the below text as Man the modern. It has been discovered that humans are not so different from the rest of the animals as they have tried to get themselves to believe. For example, the chimpanzees genetic information reveals less than a 2 per cent gap against that of humans. So therefore, what we have here is a very close kinship. The point of bifurcation between the two species, it is useful to notice, must have taken place some 4-8 million years ago.

"The recent research results allow us to think that we, Homo sapiens sapiens, or modern humans, made our appearance in the savannas of eastern Africa around 100,000 to even 200,000 years ago. As a new subspecies of a certain established species we gradually populated the whole planet Earth, upon having successfully driven away or prevailing over the rest of the subspecies. All the ancient evolutionary branches which had emerged from Homo erectus (which is known to have populated our planet throughout 500,000 years) were successfully superseded. Some scientists even insist, on the authority of genetic analyses, that no mixing with the other subspecies had occurred. Anyway, as a species we appear

to be very homogenous and young. Our closest earthly co-inhabitant used to be Homo sapiens neanderthalensis. Current science makes us think Man the modern and Neanderthal man to be, in all likelihood, completely distinct human families. They must have bifurcated from the common predecessor approximately 100,000–200,000 years ago. It is noteworthy that the two families co-existed in the territory of contemporary Europe for about 10,000 years.

The above, nonetheless, invites a host of questions. The very first question to raise is, 'Which could have been the selective advantages of Man the modern over the rest of the hominids, particularly over Neanderthal man?' We know of this hominid with a large brain to have been robustly and well-built. Members of this genus could make flint tools of stone and used to bury their dead. They were distinguished by erect posture, deeply set eyes, heavy brow ridges, prominent teeth and jaw, and sloping foreheads. Around 32,000 - 35,000 years ago, Neanderthal was gone. It seems to have occurred abruptly rather than by piecemeal. Since then, the world has been dominated by Man the modern, or us.

Why has Neanderthal disappeared? Why is it that it is us who have won at the evolutionary game of fitness and smartness? Some 45,000 down to 150,000 years ago, a new mutation to our genetic code must have entailed significant changes to the behavior and anatomy, which resulted in the appearance of Man the modern. Some scientists are inclined to hold responsible for this turn anatomical and neurological bases of human articulate speech, others favor an improved mnemonic mechanism hypothesis. There are also opinions bolstering the idea of mutational changes to Homo sapiens, which might have given Homo sapiens sapiens a decisive technological edge over less flexible Neanderthal. Some, again, maintain that Man the modern has attenuated Neanderthal man through cross-fertilization. It is not excluded, of course, that their population could have reached the levels that

could not be sustained by their primitive gathering economy [2 and 21].

Futures may provide us with more opportunities for learning new data about our familial relations with the ancient cousin Neanderthal. What is hitherto known for certain, however, is that one human evolutionary line is extict, whereas another one has spread all over. There must have been a great role to play in this process for some new mutation in our genetic code. I have taken the liberty of quoting from my earlier book at considerable length to adumbrate the scope of long-standing illusory truths and foggy euphemisms yet to dissect and shed light on. For everything there is a season. Ours is a time to unwrap the many neatly packaged illusions. Why, then, don't we pose ourselves, for a start, just two uncomfortable questions?

Question 1. Is it the case that we have survived in the tough competition of hominids because we have proved the smartest, the most aggressive and the most insatiable of all? It may well be the case that the critical mutation in our genetic code has led us to the only right decision in terms of survival, i.e., to having rid ourselves of *Homo sapiens neanderthalensis*. I am not sure, but this tack of events is not excluded.

Question 2. This one is in very much the same vein and seems, for the time being, a taboo. Is it really plausible that some genetic mutation already underway will have produced, or has already initiated, a new subspecies of Man who could seize control of the world, while *Homo sapiens sapiens* has perished – either naturally or meeting a violent end – similar to her primeval Neanderthal cousin? Are the reported personal and national income statistics of the recent 30 years the first ominous signs of this gruesome prospect? As well as life expectancy statistics revealing the dramatic differences between 'advanced' (seventy-five years) and 'backward' nations (fifty years)? As well as the breaking down of the Earth's population into 'the golden billion'

whose income and living standards are manifoldly higher than those of the rest planet's 'children'? Is it all that unreasonable to spot the very first stirrings of the cited genetic mutation within the G-7 nations and those allied in the all too aggressive and arrogant US- buttressed and propelled NATO? I am not sure, but such a postulate is not ruled out. Science has many times proved that mutations to the genetic code have always taken place, and there is no stopping them. Anyway, I can't think of a situation where a new – for the time being just hypothetical – mutation of man could be allowed publicity or/and sociological categorization. What I am absolutely sure about, however, is that a number of heretical question will be ever incremental in the future. It would be a human and humanitarian tragedy if increasingly less people were asking worrying and uncomfortable questions, wouldn't it?

***

What the future holds: A window of action

"Do we, domestic mice, have a free will, or this is something only exercised by field mice? Whose free will is more independent?"
– FROM THE DISCOURSE OF A MOUSE CIVILIZATION

As I have remarked back in the chapter on illusory truths, the opinions (otherwise manifestations of free wills) of up to 80 per cent of population are amenable to manipulation. This, as a rule, is achieved by means of the mass media. Assuming this, our free will is currently to a great extent molded by established providers in print, telecommunications, broadcasting, and film. They are supposed to ensure that our free will should take for

granted that people in some countries are dying of famine, whereas the so called affluent societies have chronic headaches about the excess of foodstuffs. They want us to view the bombing of sovereign nations as humanitarian assistance generously extended by the 'international community'. We are also preached at and made to believe it is all right that the difference between the lowest and the highest income levels has, over the recent 30 years, risen dramatically from the 1960 proportion of 1:30 to that of 1:62. Again, that 250 wealthiest individuals on our planet own the same amount of property as 3 billions of the needy. That it is alright for a country which owns 30,000 ballistic missiles to morally castigate a nation which would like to have for its defense at least ten of these. That a manifold criminal is extolled as a humanist. That modern slaves living in poor countries are forbidden to move over to rich countries (or to change a position of a modern slave for that of a modern slave owner).

Ensuring a positive evolution for our civilization would take to acquire a keen awareness of our free will sources, its determinants and modifiers. The realization that human free will is mostly abused for the maximum indulgence of the brain reward function encased in the little 'pleasure box' will be an auspicious contribution to the positive future of our civilization**. In other words, humankind needs to become clearly aware that man as a programmed biological machine has a program which filters the incoming information into good and bad; we are rewarded for the first category and for the second one we are meted out a punishment; it is this mechanism that urges us to seek and welcome comfortable truths and only good news. The acquisition of such awareness would be indeed a great asset to our thriving as a species and as a responsible community of civilized people.** It is equally important to bear in mind that our free will is often deliberately modulated. **In other**

words, it would be an asset to our prospective evolution to remember that the program which governs a programmed biological machine can be deliberately interfered with from the outward. Which is being done. We are further to be constantly aware that the free will of contemporary civilization – with its nations, armies, famine, economic wars and racism – is responsible for the optimally positive activation of the reward function of people who, on the one hand, have their say in these matters, and on the other, have been born to obey someone else's free will.

***

Quo vadis, free will?

"Adam and Eve ate the forbidden fruit, and at once a great light streamed into their dim heads."
– MARK TWAIN: LETTERS FROM THE EARTH

A group of people who survived and procreated throughout the long course of our history must have heeded the selfish caveat, 'I have to stay alert and do the best of every chance of hoarding more. If my folk stop proceeding like that, others will lose no time in seizing the opportunity and, subsequently, inflicting problems on us. Should we pursue a more moderate policy, our survival advantages and reproductive chances would be severely reduced'. This mindset, which used to urge people to struggle for ever more assets and power in order to not lag behind the others and win out against them, has been firmly etched in the human genetic code (rather than the Mosaic commandment 'don't pick your vineyard bare', i.e. leave the gleanings for the needy ones). And we are appropriately rewarded for obeying these genetically dictated instructions ("Don't miss your chance to be a

winner!"), similar to being rewarded with a 'carrot' for love-making or angling. To this very genetic code – coming from time of old and belonging in the cave – we do equally owe the unparalleled excitement of beating the opponent – in sport events, in the executive suits and boardrooms, in film contests, and, last but not least, on the battlefield. It is high time to review this siege mentality, and to re-question and re-package our stereotypes.

Fortunately, this very code also contains programs determining our eternal longing for the new, for getting ever fresh experiences and knowledge. It is this portion of human genetic code that can challenge the arrogance of power today. Coming back to our human beginnings, I will never stop being perplexed by the intended moral of the biblical episode of the forbidden fruit (Genesis, Chapter 2 and 3). Why hadn't God wanted Adam and Eve to partake of the apple from the tree of knowledge of good and bad, planted in the middle of the Garden of Eden? The two first people had been allowed to eat fruit of all the trees they could see around, but from the tree of knowledge (in fact, of self-awareness). God had warned the man and the woman that they must not eat of the fruit of that tree under the threat of a severe punishment for the disobedience ('You shall not eat of it lest you die!'). This notwithstanding, Adam and Eve, did eat the forbidden fruit, for which they were meted out a harsh punishment. The loss of immortality status ('Dust you are and to dust you shall return') and expulsion from the permanent hedonistic paradise of the Garden of Eden was the price paid for knowledge, consciousness and self-awareness. It is subsequent to the first people's Fall that the ground gave sustenance to man only as the result of painful labor, and thistles and thorns grew up, and children were born in labor pains (which the God, just and charitable, had inflicted on women for Eve's defiance). Let'em feel the rod of God!

It is not unreasonable to venture a suggestion that "*the ban on eating of the fruit from the tree of knowledge of good and bad reflects one of the oldest and most fundamental cultural archetypes of our society. People who control it, the powerful, have never been willing to let their subjects, or the downtrodden, know too much about the wheelings and dealings of the world. In particular, they have never wanted people to be able to tell good from evil. Historical evidence confirming similar bans on eating the 'forbidden' fruit' at all times (ours being no exception) is abundant. Faith has long been promoted by the power wielders as a more viable avenue to follow than scientific cognition when it comes to providing an account of the world and of the human origins. This is exactly a philosophy adopted by the 'modern slave owners' of the twenty-first century and propagated by them. The main tenet of this philosophy is unambiguous: it is undesirable that the Mo(dern)slaves should eat fruit of the tree of knowledge of right and wrong. Like Adam and Eve back in the biblical times, you are forbidden access to knowledge, and the question, 'Quo vadis, Homo sapiens sapiens?' remains to be a high taboo. And yet, and yet, and yet … Like Adam and Eve, whose curiosity was stronger than their fear of the divine wrath and who did eat of the forbidden fruit of knowledge, we will be trying, discouraged not by the prospect of punishment, to dig ever deeper into the mysteries of this world of ours. We will keep anxiously asking, 'Quo vadis, Homo sapiens, sapiens ?'* [2].

What lays ahead, then, for the free will of our civilization? A free will that firmly rests on the positive satisfaction of our brains reward function and on the illusion of truth – both molded in the incredibly long evolutionary course of human development, when we lived under entirely different conditions? What makes up the foundation of our free will belongs in the remote times when our primordial ancestors had to struggle for bare existence amidst the adverse natural environment of

the jungle, the savanna or the cave. Again, they had to kill each other in order to survive and save their descendants from a hungry death. Therefore, even now our reward function and mechanisms creating illusory truths nudge us into primitive behavior and ethos of stiff competition, involving combating nature and fighting each other. Yet today we could make do without all these. The lives we lead are no longer struggle for bear existence, for all that our reward function does not seem to be aware of this new reality. The self cannot be truly liberated without acquiring this awareness.

***

A few questions in strange taste

"To reveal all is to end the story. To conceal all is to fail to begin the story. Individuals, communities, religions, even nations, narrate themselves into existence by selecting out, by working variations upon, a few of the possible strategies that lie between these two extremes."
– ROBERT KROETSCH: THE LOVELY TREACHERY OF WORDS

According to Human Development Report 2003, p. 39: "The richest 5% of the world's people receive 114 times the income of the poorest 5%. The richest 1% receive as much as the poorest 57%. The 25 million richest Americans have as much income as almost 2 billion of the world's poorest people".

In a crude estimation, if 20% of the population has a gross domestic product (in purchasing power parity) five times higher than the rest of the 80%, the poorest 80% of the population must increase production at least five times to be in the same living standard of the richest 20%. Could our planet sustain it, when richest 20% would like to increase

production each year by a few percent also? Our planet probably could not sustain it. There are at least three possibilities how to solve the problem: i.- to keep the poor population as poor as possible for as long as possible, ii.- to decrease the population somehow, iii. - to rationalize production and consumption. How will "our free will" solve this problem on our planet?

The planet Earth populated by 6 billion people is controlled by less than one million of its inhabitants. Just one ten-thousandth of our planet's population! But the battle-cry, which has in the recent decade inspired a lively debate in the American Congress, points to yet another enemy on their way to global leadership: Number 1 enemy of the 'international community' is the united Islamic-Confucian front threatening our Christian civilization… Genocidal goals are smartly met through 'Africanization'. The United Nations 1960s estimates of the of Africa's population at the end of this millennium point to the overwhelming 1.5 billion people. But the real population of the 'black continent' is contained within hundreds of millions – by inflicting upon its people famine, civil wars, and diseases' [blamed in part on the 'fittest' of this world], writes Czech philosopher Egon Bondy in the Bratislava weekly *Slovo* of February 24, 1999.

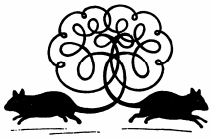
A lot of programmed biological machines have been 'extinct' by now. Is this something in store for us as well? How could 'selfish' individual free wills be brought into line with that of our civilization? Which decision will the latter take vis-a-vis, for example, a tenfold increase in population and just a twofold rise in living resources? What will be the reaction of the free will of our civilization once it has learnt that current technological advances are far-reaching and efficacious enough to ensure the creation of a global man, a global free will, global

slavery or – why not? – global feudalism, capitalism, socialism, communism, and many new 'isms'? How is the free will of our civilization going to use – or to do away with – nuclear, biological, and genetic weapons? Which vital decisions have the real wielders of our free will made yet? Which ones are they just taking or are about to make in the near future? How are they going to program us? Whereto are they driving their docile flocks (or 'herds' and hordes?), that is 'us', today and whereto will we be driven in the future? Whereto will we be rushing like mad tomorrow? Who or what will usurp the right to modulate our pleasure box with the treacherous reward function inside in the future? What will be the place of illusory truths and which will be the province of our free will? Which yet new areas will we – programmed, programmable and predictable biological machines – be able to colonize as we keep up our crusade in the pursuit of comfort and pleasure?

I have no good quick answers to these questions, and humanity, despite the staggering implosion of new knowledge, is a long way from offering any solutions to these compelling issues. Too long a way for me, a final biological machine concerning itself with its own de(con)struction.

***

References



1. Crick, F. 1994. *The Astonishing Hypothesis. The Scientific Search for the Soul.* New York: A Touchstone Book.
2. Ondrias, K. 1998. *My Motroci XXI. storocia takto prisahame (We the Twenty-first Century Mo(dern)slaves Swear.* Bratislava: Agentura IQ+.
3. Ondrias, K.. 1997. *Vseobecne kecy, fakty a nezodpovedane otazky (Some banalities, facts, and unanswered questions).* Bratialava: Polygrafia SAV.
4. Chomsky, N. 1994. *Secret, Lies and Democracy*. Tucson: Odonian Press.
5. Russell, B. 1961. *Religion and Science.* Oxford: Oxford University Press.
6. Sallmann, J.-M. 1987. *Les sorcieres, fiancees de Satan.* Paris: Gallimard Jeunesse.
7. Lewontin, R. C. 1992. *Biology as Ideology: The Doctrine of DNA.* HerperPerennial.
8. Friedman, R.E. 1995. The Hidden *Face of God*. San Francisco: Harper.
9. Allen, D. 1989. *Christian Belief in a Postmodern World. The Full Wealth of Conviction*. Louisville, Kentucky: Westminster/John Knox Press.
10. Polkinghorne, J. 1998. *Belief in God in an Age of Science*. New Haven: Yale University Press.
11. Tiner, J. H. 1995. *When Science Fails.* Accelerated Christian Education, Lewisville, Texas.
12. Lurd, B. 1990. *Majak atomoveho veku (The Beacon of the Age of Atom).* Fifth Edition. Slovak Cyril and Methodius Institute in Rome.

13. *36 otazok sucasneho sveta (Thirty-six Issues in the Contemporary World).* 1996. Bratislava: Vydavatelstvo Q111 (Q111 Publishers).
14. Markus, S. 1997. *Zapas o otvorenu spolocnost (A Battle for an Open Society).* Bratislava: Polygrafia SAV.
15. Novak, P. 1994. *The World's Wisdom. Sacred Texts of World's Religions*. San Francisco: A Division of Harper Collins Publishers.
16. Pelikan J., ed. 1992. *Deuteronomy 5:6-18*. In: *Sacred Writing*, Vol.1, Judaism: The Tanakh. New York: Book-of-Month Club.
17. *Pedagogicka encyklopedia Slovenska (Slovak Pedagogical Encyclopedia).* 1985. Vol.1. Bratislava: Veda, SAV.
18. Trefil, J. 1997. *Are We Unique?* New York: John Wiley & Sons, Inc.
19. Snyder, S. H. 1996. *Drugs and the Brain*. New York: Scientific American Library.
20. McKenna, T. 1993. *Food of the Gods.* A Bantam Book.
21. Csikszentmihalyi, M. 1993. *The Evolving Self. A Psychology for the Third Millennium*. New York: HarperCollins*Publishers.*
22. Hardmann, J.G., and Limbird, L.E. 1996. Goodman & Gilman's *The Pharmacological Basis of Therapeutics.* Ninth Edition. New York: McGraw-Hill.
23. Darling, D. 1995. *Soul Search*. New York: Villiard Books.
24. Dawkins, R. 1989. *The Selfish Gene*. Oxford: Oxford University Press (New Edition).
25. Duffack, J.J. 1996, *Tajemstvi stvoreni. Proc buh stvoril svet a cloveka (Secrects of creation. Why has God created the world and the man?* Bratislava: Eko-konzult.

About the book

An essay in style, *The Brain, Consciousness and Illusion of Truth* is a valuable addition to the literature on the mind/body problem and an engrossing account of the human brain with its services and disservices to the self. Karol Ondrias is one of the 'disturbing' authors who will not stop at taboos. Problems he addresses here are of our postmodern era, when people, still tightly controlled by their ancestral genetic code and ethnocentric cultural stereotypes, are acquiring an awareness of this and trying to review the authenticated behavioral patterns and preconceived ideas still shaping their lives. The notion of the distorted and manipulated reception of the world cuts through the whole of the essay – whether it concerns the misrepresentation of the perceived reality inwardly – by the brain mechanics, or the active – outward – organization of the reception of the messages conveyed through the mass media. Why that? Can we ever know the ultimate truth about our own selves and the world we live in? In search of the answers Karol Ondrias sinks very low – down to the molecular and cellular levels of the human brain machinery.

The Alliance having dropped bombs on a European capital city, Belgrade, for the first time in its half century, the author eschews not the issue of the many pre-fabricated political 'truths', unfair regional economic imbalances, and the old paradigm at large, which has defined international relations. The human race, the author argues, cannot afford any longer remain content with the illusory certainties provided by the 'selfish' genes and by parochial cultures (however dear to the cockles of our heart the latter might be). But isn't it just another illusion – to try and free the self from the comfortable bondage of biological and cultural forces? The essay will take you to the further and farther reaches of human nature and this may be part of the answer. A

work of a professional student of biological sciences, it is definitely one-of-a-kind in citing a wide range of intriguing evidence and conducting, through epigraphs to each chapter and sub-chapter, worldwide cultural dialogue with the prominent thinkers of all historic times. Even if this book were wrong-headed, it deserves the attention of those with an interest in – or curiosity about – the future of humanity.

– Emma Nezinska, the Editor

***

"A book that makes you realize that old illusions may become, with time, just counterproductive. But does this awareness imply seeing through the new ones?"

– Frantisek Novosad in the *Filozofia,* Bratislava

***