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## **Science and 11 September: A lesson of relevance**

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**(Abstract)**

The collapse of the twin towers of New York City's World Trade Center on 11 September 2001, caused by the terrorist attack, reflects a peculiar state of the contemporary civilization: the capacity to use rational products of technology in service of irrational fanaticism. The same was true of Nazism and Communism. There may be a causal connection between the passing-away Communism and the ascending terrorism. Science should play a major role in understanding and suppression of human propensity to irrational thought and action. Analysis of the response of science to the events of 11 September suggests that science may have not met this expectation. A change in priorities of science seems desirable. The comprehension of the nature of individual and social mythophilia and the establishment of a science of values (axiology) may have become a most urgent task.

Keywords: Communism, fanaticism, human nature, mythophilia, pragmatism, technoscience, terrorism.

The terrorist assault on the United States on 11 September 2001 has become worldwide a subject of innumerable books, essays, commentaries, analyses in mass media. And, obviously, of concern of politicians, resulting in decisions for taking appropriate political and military actions. One of the most remarkable products of modern technology, the jetplane, hijacked by the terrorists, was used in the assault in service of religious fanaticism, a trait that may have been a characteristic of pre-civilized humankind. The use of rational means for irrational goals – this is the message of the collapse of the twin towers of New York City's World Trade Center. By conveying this message, the spot left after the collapse, the Grand Zero, may have established itself as a symbol of the entry of humankind into the 21<sup>st</sup> century.

The preceding 20<sup>th</sup> century had another symbol: Nazi concentration camps and Communist gulags. The former and the latter symbols have one thing in common. They both

are reflecting a peculiar state of the contemporary civilization: the concurrence of rationality and irrationality. Communism, which appears to be widely judged as a mass delusion of unprecedented size and power, was thriving and expanding in the 20<sup>th</sup> century in parallel with the equally unprecedented expansion of science (Kováč, 2002a).

Does the terrorism of the 21<sup>st</sup> century have common roots with the totalitarianism of the 20<sup>th</sup> century? Is not one of the reasons of its upsurge the fact that humankind has not achieved a proper understanding of the very nature of Nazism and Communism and has not drawn consequential conclusions? Should not science, the paragon of rationality, take up this state of the world affairs as a warning and as a challenge? These questions are the subject of the present study.

## **Empirical data**

### ***The response of science to 11 September***

In the present times a divergence is increasing between two cultures of research: between science and technoscience (Kováč, 2002c). Science aims at comprehension of the world in order to satisfy the human need of orientation in the environment and suppressing cognitive chaos, while technoscience serves technology, production of tools to be used in effective manipulation with the world. Even though with a gross simplification, it may be said that science asks „what“ and „why“, technoscience asks „how“. The relative proportion of technoscience is growing, it enjoys generous support of governments, industry and general public, and tends to exploit and/or supplant traditional science. Increasing also is a divergence between natural sciences, in which cumulative progress is conditioned by their use of experimental method, and cultural (human and social) sciences, which virtually lack experiments and, accordingly, exhibit little cumulativness, and largely sustain in a vicious circle of gratuitous speculations. The response of science to 11 September 2001, both instantaneous and a year after, is a most impressive demonstration of this peculiar situation.

What was the response of natural sciences? In the first issue of the magazine *Science*, which appeared after the terrorist attack, two leading articles reacted on the event. The first one (Lawler, 2001) dealt with the imminent dangers of further terrorist attacks with weapons of mass destruction or chemical and biological weapons. It called for setting clear priorities to prevent the attacks and to organize efficient and strong antiterrorism programs. The second

article (Malakoff, 2001) provided an impressive technical description of why Trade Center towers could not withstand the explosion of the hijacked airliners and collapsed into a pile of rubble. The parallel issue of the twin magazine *Nature* started with an Editorial entitled “Fighting against terrorism, engaging with Islamic science” (Editorial, 2001). It saw “a critical role” of science “in the identification of the victims and in the unprecedented intelligence and military steps that the United States and others will now take to prevent such attacks in the future...” Admitting that “differences in world view between Western scientists and influential Islamic intellectuals (including scientists) can be profound”, it ended with a proclamation: “Funding agencies should foster collaborations between Islamic and Western scientists and between those in the humanities studying science. Now may be a particularly good time to do so.” (The view provoked a resolute disagreement: there is no “Islamic science”, “science is universal, not part of any religion” (Pick, 2001).). Another report in the same issue of *Nature* (Abbott et al., 2001) dealt at large with a practical consequence of the hijackers’ act, the jeopardized safety of air travel, which might reduce or stop travelling of scientists to conferences and meetings with colleagues.

It is revealing to inspect the issues of other general science journals of those days (Gannon, 2001; *New Scientist*, 2001; *Scientific American*, 2001). Again, the prevention of similar accidents seems to have been assigned as the most important mission of science: to rethink skyscraper design and building, new evacuation procedures, how to defeat hijackers, how to use robots helping rescuers, how to make airplane black boxes more crashworthy, how to apply nanowires for detection of explosives, how to improve airport security. When later distributing anthrax spores through the mail followed the hijacker attack, general science journals became flooded with papers dealing with proposals how science should be involved in fighting bioterrorism and in creating infrastructures that can deal with such attacks. Many papers dealt with the necessity to develop efficient vaccines or drugs to prevent fatal effects of infection. Consistently: efforts to answer the “how” questions, with almost total neglect of “why” questions.

It may be argued that the rigor of the „hard“ sciences continues to restrict their competence to the well-defined problems, such as the search for effective means to combat and prevent terrorism. The inquiry into the origins of terrorism and into ideas behind it should be relegated to the „soft“ human and social sciences. How, then, have these „soft“ sciences responded to the event of 11 September? A special website, promptly launched by The American Social Science Research Council as a reaction to 11 September (SSRC, 2001), may be consulted. Leading social scientists supply the site by essays in which they ponder over the

event and its causes. Publication of two volumes of September 11 essays is forthcoming. The essays constitute reading in the sense of literary work of traditional intellectuals. This collection seems to have two conspicuous features. First, the character of the essays is largely speculative and empirical data are sparse. Second, analyses of the psychological background of terrorism, let alone of its biological roots, are missing. Incidentally, a website of the Library of Congress destined to 11 September 2001, with many entries (Library of Congress, 2001), contains only one study on psychology of terrorism, which had been worked out in September 1999, and thus two years out-of-date. An authoritative book on the origins of terrorism (Reich, 1998) is even older.

Rather rare have been papers that may be placed at the boundary between natural and cultural sciences. In a prompt reaction on the event of 11 September, Richard Dawkins (2001) expressed the view that religion, with its idea of life after death, may have been the main culprit motivating the hijackers. According to him, the afterlife-obsessed suicidal brain is a weapon of immense power and danger. Young men can be conditioned for suicidal sacrifice efficiently, but essentially in the same way as the psychologist B. F. Skinner had trained pigeons to guide missiles in World War Two.

According to Lionel Tiger (2001) the September 11 attack was a work of a „miserable band of insane worshippers“. They all were young males, emotionally frustrated, who may have redirected their sexual drive toward the destructive action. For them America, „the Great Satan“, strictly translated is „the great tempter“. Tiger maintains that a firm American response may destroy the most overt groups behind the attack, but the much larger and longer-term problem to be faced by the world is the existence of „millions upon millions of these young men, not just bin Laden’s thousands“ along with „feckless leaders of the grim societies that have produced and nurtured such wild theological pathologies“.

Focusing upon the “how” questions rather than the “why” questions characterizes the attitudes of major science administrators. In redesigning priorities of science after 11 September, there have been ample references to the major role that science had played in winning World War Two, through the invention of radar and of code-breaking algorithms and the developing of atomic bomb. It has been referred to the outstanding performance of American science during the Cold War period in having met the challenge of the Sputnik, and in contributing to the demise of Communism in provoking, through the ambitious defense program, its bleeding to death. Shortly after September 11, an American science administrator expressed the view (as reported in Abbott et al., 2001) that “most scientists will accept that fundamental research is not going to be the US government’s top priority”. In a speech in

November 2001 at the Woodrow Wilson International Center for Scholars, entitled, “Science: Before and after September 11”, National Science Foundation Director Rita Colwell (2001) emphasized that “the nation’s science policy will move in the direction of national security”.

This direction has been reflected in the U. S. Administration’s proposals in February 2002 for a „war budget“, with an unprecedented level of support for research and development, boosting weapons development and biomedical research (MacIlwain, 2002). Marginalization of cultural sciences may be demonstrated even by this minor example: The American National Science Foundation reacted on the events of September 11 by providing five grants to study human and social responses to the terrorist attack (NSF, 2001). In contrast to speculative essays, mentioned above, the grants were awarded to projects aimed at collecting empirical data. The five awards may be compared with the total number of awards, made by the federal agency. It makes about 10,000 new funding awards each year.

### *Science a year after*

At the first anniversary of the terrorist attack, the magazine Science devoted two articles to the events under the joint title „One year after“ (Enserink, 2002; Malakoff, 2002). Both articles deal with purely technical problems, not even touching the causes of what had happened. They provide a most telling picture of changes in the American science in the aftermath of the attack. There is a major concern that security measures taken to prevent leak of classified research results and their misuse by terrorists, and even the vague and poor criteria of what information should be treated as classified, may hamper and endanger freedom of research. Because of the monumental increase (in some cases as high as 2,000 per cent) in funding of targeted areas, in particular in the field of biological warfare program, a process of „a frenetic dance“ of conference calls, meetings, struggles for getting a substantial slice of the grant pies has been triggered. To fit best to the „post-11 September funding environment“, new institutes have sprung up across the country, „like mushrooms after the rain“, carrying in their names the luring words „national“, „biodefense“, „emerging diseases“, „biocontainment labs“, „bioweapons researchers“ and others like that. As a science administrator commented, „it’s natural selection at work“. Offering itself as a new appropriate subject of research on human (and scientists’) behavior, one is tempted to add. With a bitter remark from the editorial of the anniversary issue of *The Times* (Editorial, 2002b) that 11 September „seems to have altered little, but changed much“.

The technical matters of the September 11 aftermath have also been the only concern of the anniversary issue of the magazine *Nature*. The Editorial has dealt with establishing in the United States of the Department of Homeland Security, as „the precise threats facing the nation are uncertain, but challenges in its preparedness to deal with attacks on health and agriculture are all too obvious“ (Editorial, 2002a). The new department has also been a subject of the second paper (Brumfiel, 2002) in the same issue, which has stated plainly that the Department is to be given the task of defending the U.S. against further terrorist attacks. The systematic profound search for the causes of terrorism and for its eradication at its very roots as part of the mission of the Department has not been considered, not even mentioned, in the two papers.

A flood of papers and books published, and a number of specific web sites opened, in a year since 11 September 2001, dealing with various aspects of the terrorist attack and of terrorism in general, may already be beyond a capacity of a human individual to review and to sum up. It may call for a computer-assisted sorting and evaluation in order to filter out redundancy, trivialities and mass repetition of ideas. As in other areas of topical interest, some intellectual products, assembled from popular science, moralization and sweeping speculations may have been contrived to satisfy the criteria of the entertainment industry. Science and its popularization is not immune to market forces, but, rather, it is becoming more and more dependent upon them, in whichever field.

This is not to deny scholarly rigor of some publications. In a booklet on terrorism, a panel on behavioral, social and institutional issues of the U. S. National Research Council has outlined the situation after September 11 and identified and elaborated a number of priorities for research (Smelser and Mitchell, 2002). A book of B. Lincoln (2002) entitled *Holy terrors* may typify those efforts that go behind general rhetoric and delve into empirical data. He attempted to prove that religion has been the prime mover not only of terrorism but also of the most arduous reactions against it. According to him, religion is the institution through which unified communities ensure integrity of their culture in the wake of globalization. Successful leaders do articulate beliefs, values, allegiances, anxieties of their respective communities. Lincoln's comparison and analysis of the speeches of Osama bin Laden and of George Bush Jr., delivered less than a month after the terrorist attack of 11 September, is highly revealing. The resemblance between the two speeches is striking. Both leaders dichotomize the world into „us and they“, for both of them this is a Manichaeian struggle, where Sons of Light confront Darkness. Both try to mobilize their community by the appeal to common values carrying an emotionally charged label (faith and freedom, respectively), both refer to

suffering of children to emotionally arouse the adherents. Bush, steering clear of religious rhetoric for the sake of political unity, still reassured his constituents through coded allusions that American policy is firmly rooted in faith. Each leader is firmly convinced that he represents the only Truth. It should be reminded that originally, in an immediate reaction on September 14, Bush described his anti-terrorist campaign as a Crusade against a new kind of Evil. The same biological constants behind the two opposing semantics appear undeniable. Two hostile human groups, with different interests, do always need a standard, biologically efficacious, verbal glue to foster intragroup solidarity and enhance aversion and hate toward the Others. In the course of centuries, the size of groups has been increasing from a small band of hunters and gatherers up to its present global dimensions, and jets and laser bombs have substituted stones and spears, but group-specific religious mythologies continue to be the most effective dopes and energizers of the human animals.

The awareness of this disparity may be lacking not only among politicians and in general public, but also among intellectuals, including members of the scientific community. An exchange of views on terrorism and on the war against it between American and German scholars (American values, 2002) may remain a key testimony to the posterity of the paucity of contemporary knowledge, of persistence of human mythophilia and of cultural determination of indisputable beliefs and prejudices even among the most enlightened members of our species. On the one side, 60 Americans, on the other one 100 Germans. Most of them academics, professors of law, sociology, political sciences, psychology, theology (with a conspicuous absence of natural scientists). The only issue they may concur on is the condemnation of the September 11 attack. Otherwise, the two sides politely disagree with each other even on some most elementary items. The Americans name five truths that they consider as „universal“ and „self-evident“. For a biologist, however, all these truths may seem to be determined by a specific culture and some may run against the available biological knowledge: there is no proof that „human beings naturally desire to seek the truth about life’s purpose and ultimate ends“ and that „killing in the name of God is contrary to faith of God“ – evidence seems to be rather to the contrary. The very conviction that a truth is „self-evident“ is a trait of the human cognitive apparatus and, thus, a product of biological evolution. Indeed, the latter statement may be the only „truth“ concerning the „self-evidence“ of any truth.

The American and German scholars disagree on the definition of „just war“, on the veritable reasons behind the American decisions to wage war against the suspected breeders of terrorism, on the presumed causes of dissatisfaction in the underdeveloped countries. There



are also disagreements about the notions of sovereignty and legitimacy, about the maintenance of safety and equilibrium of forces in the world, about the extent and limits of plurality of views and intentions. One conspicuous feature of this dispute should be made explicit: almost all claims of either of the two parties are strictly monocausal. As an example, the reason of the intended war is either protection of spiritual values (seen so by the Americans) or geostrategic interests of the U. S., such as the access to oil wells and to oil transportation routes (as maintained by the Germans). Again, a biologist would easily discern a biological trait of humans: persistent proclivity of the human mind toward monocausal explanations of events.

The two groups of the scholars may be considered to belong, at a certain level of conceptual graining, to the same, Euroamerican, culture. No wonder that a still much more profound disagreement with the American view has been voiced by Islamic scholars, representing a different culture (Saudi intellectuals, 2002). Science, however, is generally considered to be an intercultural, indeed, overcultural, endeavor. What kind of intellectual activity are then pursuing all those professors of political sciences, sociology, anthropology, who may agree, more or less, with each other within a single, their own, culture, but adhere to disparate „truths“ when confronted with their professional colleagues belonging to a different culture? Is this not a proof that cultural sciences have not yet achieved a status of a genuine, mature science?

### ***A causal connection: Communism – defeated, unexplored***

It has been said quite often since 11 September 2001 that, on that date, the world we knew before has ended. Many Americans declared that the terrorist attack would mark a turning point in the American history. Accordingly, the event of that day may be dubbed the American Break. It may have a lasting effect on all aspects of the American life, including science.

The American Baruch Myers (2001), who is serving as a Rabbi of the Jewish community in Bratislava, Slovakia, commented on such views: If our familiar world ended, it did not end on 11 September 2001 but on 11 May 1944. On that day, two of the four gas chambers in the concentration camp of Auschwitz were completed and started to operate. Five thousand Jews were murdered in twenty minutes – more humans than perished during the collapse of the New York City's towers. During the next 44 days killing by gas went on day by day and in every single day ten thousand people died. As much as 6 million Jews may have

been killed by the Nazis. Rummel (1997) estimated that the total number of victims of Nazism were 20.9 million.

However appalling the latter figure is, it is but a fifth of the number of people that perished under Communism (Courtois et al., 1997). Both Nazism and Communism have been considered by many commentators as secular religions. Strict Mannichean dichotomization of Good and Evil characterized both of them, with Evil firmly specified (Jews and bourgeoisie, respectively) and demonized. The French historian François Furet (1995) called them a “dual religion in the world without religion” and the British historian Eric Hobsbawm (1996) spoke of the great wars of the 20<sup>th</sup> century as of the “(secularized) religious wars”.

There were other religious wars in former centuries. In fact, European history abounds with religious wars. In Marxist interpretation, fashionable in the 20<sup>th</sup> century and still surviving in some academic quarters even after the demise of Marxist Communism, religion served but as a fig leaf to conceal the “true” reasons of the wars, which were economic, material interests of the hostile parties. Marxist interpretation of history, the reduction of pluricausal dynamics to a single cause, is a blatant example of the human proclivity toward monocausal explanation, which has already been mentioned above. With this cautionary remark in mind, the search for a single cause of social events should be barred out as naive and misleading. At the same time, the weight of human mythophilia, which encompasses a religious component, in shaping social events, including violent conflicts, seems to be heavy and should never be overlooked.

Seen in this way, Nazism was not a break in history, as Rabbi Myers may see it, and neither was Communism. They do not stand out of the equivocal advancement of the human species. Definitely, they brought with two novelties: the horrid death toll of millions of human victims, and the totalitarian rule. It was new technology that provided tools for both mass killing and totalitarianism. Science, by intermediary of technoscience and technology, was eventually the main factor that made possible the era of totalitarianism in the 20<sup>th</sup> century.

It has been pointed out that Communism was an outgrowth, if not a culmination, of two streams of European thought, classical rationalism and romanticism (Kováč, 2002a). Inspired by imposing progress of science, in particular mechanics, in the 18<sup>th</sup> and 19<sup>th</sup> century, the Marxist project of Communism intended to create a “scientifically managed society”. It failed. Instead of creating institutions by rational design, spontaneous dynamics of society under Communism gave rise to institutions that, by their irrationality, had no precedent in history. The failure falsified some fundamental hypotheses on human nature and on social

dynamics on which the Communist project had been based. But, first of all, it has proven how little we still know about humans and society.

Technology not only provided tools to make Communism possible, but it also speeded up the course of history, making density of events substantially higher than ever before. Because of this, seventy years of Communism have accumulated a huge amount of data, possibly more than other historical periods that had lasted for centuries. Many of them may have not been anticipated by the hypotheses. These data have remained largely unexplored. The same applies to the dramatic phase of post-Communist transition in Central and Eastern Europe and in Russia (and, possibly, China). It may be appropriate to apply upon them a new methodological principle, which nowadays is complementing the traditional approach in molecular biology: data-driven research in addition to hypothesis-driven one. “The goal is to discover things we neither knew nor expected... The ultimate goal is to convert data into information and then information into knowledge. Knowledge discovery by exploratory data analysis is an approach in which the data ‘speak for themselves’...” (Brown and Botstein, 1999).

*A posteriori*, Communism may be conceived of as a large social experiment. The possibilities of intended, designed experiments with humans and society are very limited, both morally and technically. It has been rarely recognized that human populations living under special, unusual conditions, “greatly extend our research capabilities and provide a natural laboratory...” (Garruto et al., 1999). It has been argued that under the special “laboratory” setting of the two totalitarian systems some fundamental biological characteristics of the human species may have come to the fore: humans are mythophilic, fearful, group-confined, and hyperemotional animals (Kováč, 2002a). However, there has been a conspicuous asymmetry in treatment of the subject by sciences so far: it has abounded in speculations but has been in want of empirical analyses. Inspired by the new molecular biology, the data mining, just mentioned above, may become a new form of the empirical analyses.

Communism, as a secular religion, was largely satisfying the human mythophilic need. This was the case in Communist countries, particularly in its early, arduous, orthototalitarian phase (Kováč, 2002a), but perhaps no less in the underdeveloped countries of the Third World. It was remarkable to observe to what a large extent dogmatic folk Marxism was able to displace Islam, not only in Islamic countries of the former Soviet Union, but also in other parts of Asia and in Africa. As stated by Paul Richardson (2001), with the collapse of Communism, traditional religion has become a focus for hope on the part of the bitter, disillusioned and impoverished peoples of the world. In general, religious fundamentalism

may aspire to fill in the mythophilic void after the demise of the Communist utopia, and the upsurge of terrorism may be a symptom of this succession process. However infatuating Marxist religion may have been, it was not promising life after death. Marxist fanatics would commit all kind of atrocities, but only rarely sacrifice their life for the great idea or, more likely, for the Leader. They could hardly be indoctrinated in mass for suicide bombing, since they would not face a prospect of after-death eternal reward. In this respect, too, the Communist experience calls for systematic scientific exploration and exploitation.

## **Discussion**

### ***Pragmatism, instrumentalism, and Russell's turkey***

By reviewing the reactions of science to the event of 11 September, both instantaneous and a year later, one can hardly overlook a bias in the attitude of both researchers and science administrators. The attitude may be sum up: recording „what“, neglecting „why“, prioritizing „how“. Two major measures taken by the U. S. politicians are in correspondence with this attitude: an imposing increase in science and technology budget targeted mainly to development of effective defense against all kinds of terrorist attacks, and the creation of the Department of Homeland Security that will consolidate 100 government agencies into a single super-agency, employing 170,000 people.

These reactions to a concrete event have a much broader implication. They reflect a general condition of the contemporary science. The efficacy of science in providing new materials apt for technological exploitation is such that ever more funds are appropriated for areas of research of clear and prompt benefit to medicine and industry. Science is more and more becoming technoscience. Why to invest much time and money to get knowledge of the nature and profound causes of phenomena if one can do without such a knowledge and manipulate the phenomena according to one's will and intention? This can be demonstrated – simplifying, exaggerating, but nevertheless paradigmatically – on the problem of mental disorders. Thanks to psychopharmacology, their treatment has progressed considerably. New methods of rational combinatorial synthesis of chemicals allow preparation and testing of enormous number of new drugs. It is conceivable that a stage may soon be reached when mental disorders will be entirely curable, and even precluded by prevention, or eradicated by gene manipulation – and we still will ignore the essential causes and mechanisms of the disorders.

This example has been taken to the extreme, but only because it may resemble the actual approach to the problem of terrorism. Technological means, available to the highly advanced and affluent country, may eventually entirely prevent terrorist attacks and wipe out foci at which terrorism arises and thrives, and yet, at the same time, we may continue to fail to know the essential reasons that engender and give birth to terrorism. In the first reaction to the terrorist attack of 11 September Lawler (2001) mentioned already the warning of Harvard biologist Matthew Meselson that „technical solutions can't solve the problem of terrorism“.

There is little doubt that the technoscientific approach is being reinforced by a philosophy, which is authentically American, pragmatism. In the conception of pragmatism, humans are not tenaciously craving for knowledge, but primarily striving for living and surviving. Truth corresponds to what is functioning and is good for us. „Truth is simply a compliment paid to sentences seen to be paying their way“ (Rorty, 1979). To understand means to execute. The problem is solved once its occurrence is annulled by precisely targeted interventions. – If this is the complete solution, if the only goal is the annulation of the problem, the goal has been reached – this is rationality in action. Indeed, biological rationality has this character (Kováč, 2000).

The biological rationality has, however, an essential shortcoming: it is always the rationality of Russell's turkey (a recurrent theme of Riedl's epistemological analysis, *e. g.* Riedl, 1994). A turkey, fed by a farmer, anticipates the future as a continuation of this beneficence with no idea that this is just preparing her for a pan. Even though anticipating, she does not see the future, the anticipation is essentially an extrapolation from the past experience. But the dynamics of the world are not linear chains of events: the wisdom of Russell's turkey ends at the instance of a qualitative change. The paradigm of Russell's turkey is what makes the approach of pragmatism successful in a short run, in the phase of deterministic dynamics of events, but fallacious as far as a distant future is concerned. Not a pragmatic removal, annulation of a problem, but the comprehension of its substance may be considered as a genuine preparation for facing the novelties that the future will bring forth.

Rationality of evolutionary institutions of society, designed by cultural evolution, has the same shortcoming as has biological rationality. This holds also for institutions of the modern society, for democracy and the market. Long-term consequences do usually not loom in the agenda of politicians in democracy. This is true as well, more and more, for the institution of science, as it is ever more surrendering and getting subordinated to the demands and pressures of political and economic markets. The genuine science should, however, transcend the biological rationality. It should have in sight a much distant and larger horizon.

### *A plea for shifting priorities of science*

Even though the event of 11 September are not to be taken as a break in history, in view of the arguments presented above, it may be seen as a break in the history of the U. S. Virtually for the first time in its history a violent assault, which has been declared the act of war by the President of the U. S., was perpetrated by an external force at the American territory. Self-confidence of the nation has incurred a shock. Fear has emerged. The lesson of Communism has shown that humans are not only mythophilic, but also timid, fearful, frightened animals (Kováč, 2002a). In the situation of fear, securing safety becomes the main priority. 11 September has substantially changed the American politics. As Hendrickson (2002) remarked: „When September 11 occurred, the event was so shocking as to convince American leaders that we have entered a new age, and indeed the broad outlines of the new American policy have been revolutionary. They involve, in detail and in gross, a rejection of previous standards and doctrines that have long defined American statecraft and diplomacy.“

Mobilization of all forces, intellectual as well as military, to protect the country and to destroy centers of menace is hence quite understandable. Building up defense against imminent threat is obviously the top priority, and is also in accord with the character of politics, which, as mentioned above, functions by setting short- (or, at the best, medium-term) goals. By necessity, technoscience and technology must have joint this effort. Biological rationality has set in. The principal operating agency of the U. S. National Academies of sciences, The National Research Council has also reacted in the same way. A committee of scientists, engineers and medical specialists has prescribed an agenda for combating terrorism in a report that ranges from biomedical sciences to nuclear devices and from energy systems to information technology (Committee of Science and Technology for Countering Terrorism. 2002). The nature of terrorism and its profound causes have not been focused at in the report. In November 2002, the two highest personalities of the U. S. and U. K. science, President of the U. S. National Academy of Sciences and President of the Royal Society reiterated this commitment of scientists to reduce the threat from terrorism, specifically from biological weapons (Alberts and May, 2002).

It is just on the background of all these measures of the aftermath of September 11 that a unique opportunity for science to ponder over its own autonomous goals comes to the fore. What follows is restricted to biology and to the problem of bioterrorism, but is intended to have a general validity. Effective defense against a bioterrorist attack is certainly an urgent

task. The means of how to achieve it have been discussed many times in the course of the last year. Genomics, proteomics, bioinformatics should play important roles. Great sums of money have been allotted to project of accelerated sequencing of pathogens, of their rapid and reliable detection, of preparation of effective vaccines and protective and therapeutic drugs. It has been even suggested by a specialist in bioterror research (as reported by Lowy, 2002) that rather than proceeding slowly with biodefense research, a biodefence equivalent to the Apollo space program of the 1960s be launched. But is provision of effective means of protection, defense and treatment a real solving of the problem of bioterrorism, and, by implication, of terrorism in general? Successful terrorism resembles vigorous biological parasitism, and so the contest with terrorism may easily take a character of never-ending Red Queen dynamics (Van Valen, 1973): efficient measures of the host are neutralized by efficient counter-measures of the parasite, calling for elaboration of new measures, and so forth.

To defeat and eradicate terrorism presupposes to comprehend its essence. Even though it is provoked by social and political set-ups and nourished by indoctrination with extremist ideologies, terrorism seems to be, at its very basis, a phenomenon of human biology, just as is mythophilia, fearfulness, fanaticism, aggressiveness, intolerance, but also the capacity of militant enthusiasm and of self-sacrifice. The problem of biological foundation is not, however, a problem to be approached at the level of molecular biology, so fashionable and favored nowadays. (The same, obviously, holds for understanding of the roots of Nazism and Communism.) Solving the problem requires deployment of biobehavioral research and expansion of biology into the areas of research that have been so far exclusive domains of inquiry of cultural (human and social) sciences. The fact that molecularization of biology has enabled impressive technological interventions should not detract from this need of moving to the upper level of inquiry.

The case of the dissemination of anthrax spores by mail, which happened shortly after 11 September 2001, is ironical but also highly revealing. It was instantly conceived as part of the organized terrorism, the same that had been involved in destroying the World Trade Center, and has set off a flurry of actions intended to fight it. But thorough investigations traced the mail anthrax back to the U. S. Army Medical Research Institute and the likely perpetrator is a disgruntled scientist (Burkeman, 2002). A psychopath or a person with mental disorder, one may suppose. It may happen that we will soon dispose of efficient vaccines against anthrax and other deadly pathogens and will still be deplorably ignorant and in want of knowledge about the motives of actions of people mentally abnormal or ill, with penchants to exhibitionism and/or homicide. The paradigm of pragmatic winding up of psychoses due to

success of drug therapy, without simultaneous understanding of the nature of psychoses, should be recalled here. A psychopath, disabled from murdering people by disseminating anthrax, would easily find another manners to give vent to his Herostratic complex.

Investigation into the nature of human mythophilia may be the most important task. Not only mythophilia behind the fanaticism of aggressors but also behind the fundamentalism of defenders. The study of the genesis of myths and of their functions in human affairs has an additional urgency: the evolutionary institutions themselves, including democracy, have apparently myths in their foundations, despite the embodied wisdom they have accumulated in the course of history. In particular, religious myths may have been among the foundation stones. Myths gave rise to the institutions of state, morals, law (Lévi-Strauss, 1978). Myths may have secured and reinforced stability and viability of the institutions by exploiting human fear, conformity and idolatry. A phenomenon that may be dubbed the Great Disparity also should not be overlooked: only a relatively small number of people have been generating new ideas that eventually have shaped the culture and the fate of masses. In the U. S., the Great Disparity is apparent in the tension between the secular state, based on the ideas of a small group of the Founding Fathers as materialized in the Constitution, and a nation that places strong value on religious commitments. Science itself is part of the Great Disparity: although the number of scientists is steadily increasing they represent only a tiny fraction of the entire population. The masses enjoy artifacts of modern technology and, at the same time, adhere to traditional myths, quite often contradictory to the ideas from which the artifacts originated. In the U. S., the scientifically and technically most advanced country, less than a half of adults know that the Earth orbits the Sun once a year, only 21 per cent can define DNA and only 9 per cent understand what is a molecule (Augustine, 1998). 94 per cent of American adults believe in God, 89 per cent in heaven, 73% in the Devil and hell, 36% in ghosts, 37% accept astrology and 23% believe in reincarnation (Taylor, 1998). Only 9% of Americans accept that humans developed over millions of years from less advanced forms without God participation, 40% accept an account of evolution as a process guided by God, who also created humans, and 47% are persuaded that God created humans pretty much in their present form at one time within the last ten thousand years (Robinson, 2000).

Public opinion surveys in Iraq or Iran would probably not differ much from the surveys collected in the U. S. “The unfortunate, non-democratic truth is that science in the United States, and other nations, too, prospers in a state of disengagement from public understanding of the substance of science” (Greenberg, 2001).



In the developed countries, the traditional myths are slowly losing their vigor and efficacy. Concomitantly, and probably as a consequence of it, the traditional institutions may be getting unstable and slack. But can an ordinary human being, and hence the majority of humankind, exist without myths? Can existing human institutions survive the decline of myths? In many of his writings, Walter Lippmann, a keen observer, was pondering over the question: How will humankind, deprived of the great myths, satisfy the needs that had called forth the necessity of the myths? The question may have become urgent after the fall of Nazism, but it may have been passed unnoticed. It is, therefore, praiseworthy that after the fall of Communism Jean Daniel (1998) has come up with a similar question: „How to breathe pathos, idealism, responsibility and desire to transcend oneself – in short, how to breathe religion into democracy and market economy: there is no other veritable problem for the next century. (...) All that gave birth to the Communist idea, all that prompted people to become members of Communist parties, continues to be present in the whole world, threatening and dangerous.“ This was said in 1998. The event of 11 September 2001 and its aftermath have made the situation still more precarious, more complex and more inconsistent. Lippmann’s question has become more urgent than ever before.

### *A case for the science of values*

September 11 has given further support to the conclusion drawn from the analysis of the Communist failure: science cannot be indifferent to values (Kováč, 2002b). It had been fashionable to call the search for a link between science and values the „naturalistic fallacy“, by arguing that „Ought-sentences“ cannot be derived from „Is-sentences“. The naturalistic fallacy may prove to be itself a fallacy. Normality and abnormality are not relative concepts, not social conventions, not ideological constructions. This biological truism may become a founding axiom of the science of values, axiology, which has long been overdue.

It has been argued that in addition to descriptive statements science is authorized to use stipulative statements (in the form: if...then) and that the stipulative statements may be placed at the intersection of descriptive and normative statements. Along with science, a special domain of culture, neither science, nor religion, law, morality should be recognized and promoted. It has been called humanistics (not to be confounded with the common English term humanities) and consists in activities aiming at ascribing human relevance to discoveries of science, explicitly formulating values that may be implied by the discoveries and that implicate specific norms. The views of humanists do not aspire at universal validity. They

make the cultural meme pool rich and polymorphous, which is the precondition for competition and selection of ideas and thus for evolutionary growth of knowledge. The clarification of the terms is a prerequisite for mutual understanding of those aiming at promoting science to its due role in the September 11 aftermath. A scrutiny of the exchange of views of American and German scholars, presented above, discloses how misleading may become a confusion in using indiscriminately descriptive, stipulative, normative and also optative (expressing wishes) statements.

Notwithstanding the fact, mentioned above, that science is generally considered to be an intercultural, indeed, overcultural, endeavor, the origins of science and its deployment have mainly been due to European (Western) culture. At the same time, it is the merit of science that European culture has been continuously evolving, with ever increasing speed, and has accomplished substantially more trials than any other culture. From this point of view – narrowly evolutionary, it should be stressed – is the European culture the most advanced of all cultures. It has generated incomparably more new ideas. As Malik (2002) put it, „not because Europeans are a superior *people*, but because out of the Renaissance, the Enlightenment and the scientific revolution flowed superior *ideas*.“ He adopted the view of Lévi-Strauss (1978, 53) that some peoples are „temporarily backward“ rather than „permanently different“. To regard them so „is to accept that while people are potentially equal, cultures definitely are not; it is to accept the idea of social and moral progress; that it would be far better if everybody had the chance to live in the type of society or culture that best promoted human advancement“.

It may have been mainly the inherent rapid evolution that has given European culture its main characteristic: it is highly polymorphous. It belongs to those rare cultures that takes itself for imperfect and subject to improvement. This has been a permanent source of utopias, including the Nazi and Communist ones. But it has also generated skepticism, including its recent virulent form of postmodernism, which borders on self-denigration. As Malik (2002) put it, overly exaggerating, „in place of the progressive universalism (...), contemporary Western societies have embraced a form of nihilistic multiculturalism.“ Postmodernism not only denies that cultures may differ in their knowledge advancement, but it also considers science as just a kind of „meganarration“, equivalent to other meganarrations like religion, myths, artistic creations. Many scientists and humanists have tolerated postmodernism with elevated recognition that its grandiloquence serves to its protagonists as a fig leaf to conceal their ignorance of modern science. After September 11, a revision of the indulgence to postmodernism may be a step toward the establishment of the science of values.

## Conclusion

September 11 has laid bare the precarious evolutionary stage that humanity has attained: we can do too much in a situation when we understand too little. Our understanding of nonliving matter may be considerable, our capacity to manipulate with the living world and to intervene by force into social affairs is great and is still rapidly increasing, but our knowledge of human nature and of social dynamics is lagging behind. This calls for reevaluation of the relationship of science to technoscience and technology and for shifting its priorities. The longed-for „theory of everything“ may turn out not to be the final theory of the fundamental elements of the world but the theory of mind and of its relation to the universe.

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